GROUND-WATER RESOURCES DATA FOR BALDWIN COUNTY, ALABAMA

By James L. Robinson, Richard S. Moreland, and Amy E. Clark

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CONVERSION FACTORS, VERTICAL DATUM, ABBREVIATIONS, AND ACRONYMS

Multiply	by	To obtain
inch (in)	2.54	centimeter
inch per year (in/yr)	25.4	millimeter per year
foot (ft)	0.3048	meter
square foot (ft ²)	0.0929	square meter
mile (mi)	1.609	kiilometer
acre	4,047	square meter
acre-feet	325,900	gallons
square mile (mi ²)	2.59	square kilometer
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second
cubic foot per second per square mile (ft ³ /mi ²)	0.01093	cubic meter per second per square mile
cubic foot per second (ft ³ /s)	448.831	gallons per minute
gallons per minute (gal/min)	0.06308	liter per second
gallons per minute (gal/min)	1,440	gallons per day
million gallons per day (Mgal/d)	0.04381	cubic meter per second

Temperature in degree Fahrenheit ($^{\circ}$ F) can be converted to degree Celsius as follows: $^{\circ}$ C = 5/9 x ($^{\circ}$ F - 32)

Sea Level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NVGD of 1929) - a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

ABBREVIATIONS AND ACRONYMS

ADECA - Alabama Department of Economic and Community Development

ADEM - Alabama Department of Environmental Management

DOT - Alabama Department of Transportation

GSA - Geological Survey of Alabama

GWSI - Ground Water Site Inventory database

NWFWMD - Northwest Florida Water Management District

USGS - U.S. Geological Survey

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ABSTRACT

Geologic and hydrologic data for 237 wells were collected, and water-levels in 223 wells in Baldwin and Escambia Counties were measured. Long-term water-level data, available for many wells, indicate that ground-water levels in most of Baldwin County show no significant trends for the period of record. However, ground-water levels have declined in the general vicinity of Spanish Fort and Daphne, and ground-water levels in the Gulf Shores and Orange Beach areas are less than 5 feet above sea level in places.

The quality of ground water generally is good, but problems with iron, sulfur, turbidity, and color occur. The water from most private wells in Baldwin County is used without treatment or filtration. Alabama public-health law requires that water from public-supply wells be chlorinated. Beyond that, the most common treatment of ground water by public-water suppliers in Baldwin County consists of pH adjustment, iron removal, and aeration.

The transmissivity of the Miocene-Pliocene aquifer was determined at 10 locations in Baldwin County. Estimates of transmissivity ranged from 700 to 5,400 feet squared per day. In general, aquifer transmissivity was greatest in the southeastern part of the county, and least in the western part of the county near Mobile Bay. A storage coefficient of 1.5×10^{-3} was determined for the Miocene-Pliocene aquifer near Loxley.

INTRODUCTION

Baldwin County is the largest county in the State of Alabama. The population of Baldwin County in June 1994, was estimated at 115,685 (U.S. Bureau of Census, 1995) and is projected to be 150,000 by the year 2000. Currently, Baldwin County is the fastest growing county in Alabama. Major population centers in Baldwin County (fig. 1) are Bay Minette, Daphne, Fairhope, Foley, Gulf Shores, Loxley, Orange Beach, Perdido, Robertsdale, Spanish Fort, and Summerdale.

Baldwin County is 100 percent dependent on ground water for water supply. Ground-water withdrawals in Baldwin County were estimated to be about 7 million gallons per day (Mgal/d) in 1966 (Reed and McCain, 1971), 12 Mgal/d in 1980 (Baker and others, 1982), and 30 Mgal/d in 1990 (Baker and Mooty, 1993). The effects of future increases in ground-water withdrawals, to supply the needs of the growing county population, cannot be assessed without defining existing conditions. To address the future of ground-water development, the Baldwin County Commission requested the U.S. Geological Survey to perform a study of the ground-water resources of Baldwin County.

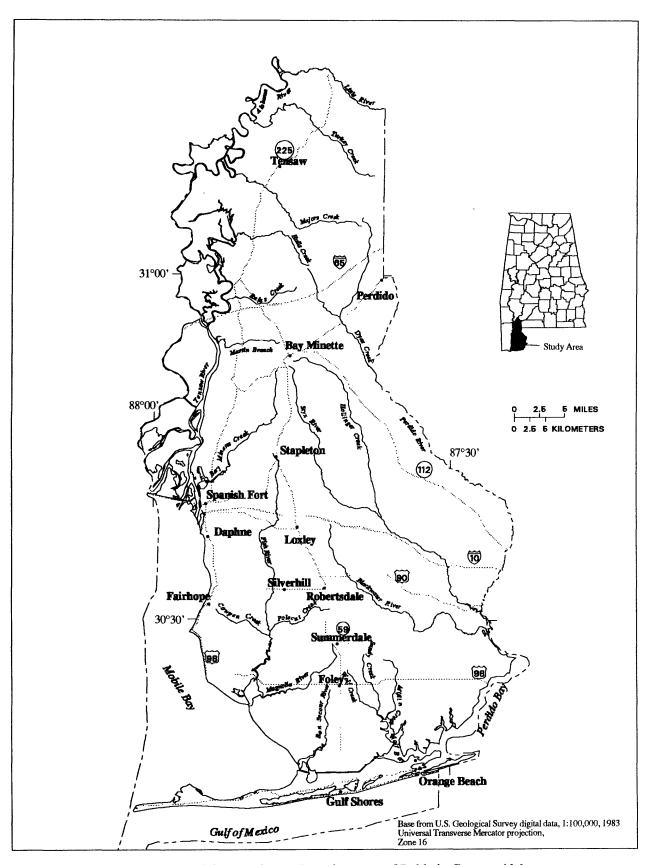


Figure 1.—Location of cities, major roads, and streams of Baldwin County, Alabama.

Purpose and Scope

The objectives of this report are to present a summary of existing ground-water data in Baldwin County, and to present data collected during the period of investigation from September 1994 to November 1995. A literature search for existing data was performed. Geologic and hydrologic data were collected from the files of the U.S. Geological Survey (USGS), Geological Survey of Alabama (GSA), Alabama Department of Environmental Management (ADEM), Alabama Department of Economic and Community Affairs (ADECA), Alabama Department of Transportation (DOT), the Northwest Florida Water Management District (NWFWMD), and from drilling companies in Baldwin County and adjacent counties. To assess current conditions, an inventory of existing wells in Baldwin County was performed; and two synoptic, mass water-level measurements were made in the inventoried wells. The second of these synoptic measurements will be summarized and published later by the USGS. Selected physical and chemical properties of water from wells in Baldwin County are presented. Aquifer-test results were analyzed for 10 public-supply wells.

Previous Investigations

Many reports describe the geology and hydrology of Baldwin County. Adams and others (1926) and Osborne and others (1989) include geologic maps of Alabama. Reed (1971) presents a study of the geology of Baldwin County. Copeland (1968), Miller (1986, 1990), Miller and Renken (1988), and Davis (1987) present regional studies of the geologic and hydrogeologic framework of Alabama and adjacent States. The subsurface geology of Baldwin County was described by Walter and Kidd (1979), Raymond (1983, 1985), Raymond and others (1993), and Smith (1989). Studies of the deep subsurface of Baldwin County include a magnetic survey (Eby and Nicar, 1936) and a gravity map (McWilliams and Joiner, 1970). Studies of the geomorphology of Baldwin County were included in Carlston (1950), Hardin and others (1976), and Smith (1986). Studies pertaining to the ground-water resources of Baldwin County include Reed and McCain (1971), Walter and Kidd (1979), Hinkle (1984), Chandler and others (1985), Gillett and Moore (1987), Mooty (1988), and Chandler and others (1996).

Acknowledgments

The authors wish to thank the citizens of Baldwin County who assisted the data collection efforts. The staff of the water departments at the cities of Gulf Shores, Fairhope, Bay Minette, Foley, Daphne, Robertsdale, Loxley, Summerdale, Silverhill, and Stapleton deserve special recognition and appreciation for their willingness to adjust pumping schedules so that water-level measurements could be made. The Perdido Bay, Bay Sewer and Water, Orange Beach, Stockton, Tensaw, and Spanish Fort water supply authorities deserve equal recognition. Finally, J.C. Peevy, George Kaiser, Norman and Larry Woerner, Mickey Alms, Sparky Wilson, and Jim Cherry are recognized for their help.

PHYSICAL SETTING OF BALDWIN COUNTY

Baldwin County lies within the East Gulf Coastal Plain physiographic section (fig. 2). The majority of the land area of Baldwin County lies within the Southern Pine Hills District (Sapp and Emplaincourt, 1975). The land area bordering the Alabama and Tensaw Rivers falls within the Alluvial-Deltaic Plain District, and the coastal area of Baldwin County falls within the Coastal Lowlands District.

Land surface elevation in the Southern Pine Hills District ranges from about 300 feet (ft) above sea level to about 30 ft above sea level. The Southern Pine Hills is an elevated, southward-sloping dissected plain developed on Miocene estuarine deposits to the north and on sand and gravel deposits of the Pliocene Citronelle Formation to the south (Davis, 1987). The Alluvial-Deltaic Plain District consists of alluvial and terrace river deposits. Land surface ranges in altitude from about 100 ft to sea level. The Coastal Lowlands District includes all the coastal areas of Baldwin County up to the base of the Pamlico marine scarp at an altitude of about 25 to 30 ft (Mooty, 1988). Typical landforms in the Coastal Lowlands District include flat to gently rolling plains, tidal streams, marshes, and wetlands.

The terrain in the northern two-thirds of Baldwin County is marked by long, rolling hills, entrenched streams and rivers with steep banks. Streams draining westward to the Alabama and Tensaw Rivers drop to base level in relatively short distances, and are characterized by as much as 250 ft of relief (Davis, 1987). Relief in the southern third of Baldwin County is comparatively small; most streams and rivers have broad channels and low, gently sloping banks.

Climate

Rain is the primary source of ground water, therefore, the average-annual rainfall in Baldwin County is of use in any compilation of ground-water data for Baldwin County. Average-annual rainfall is about 66 inches (in.) with July and August the wettest months and October and November the driest months. Monthly-mean and annual-mean rainfall and temperature data for three stations in Baldwin County, based on the standard 30-year reference period of 1961-90, are listed in table 1 (National Oceanic and Atmospheric Administration, 1991). The data show that the annual-mean rainfall reported at the stations is approximately uniform throughout Baldwin County, with a range from 65.10 to 66.39 in. The difference in monthly-mean rainfall between the wettest months and the driest months is about 4 in. Based on the data in table 1, the coldest month in Baldwin County is January, and the warmest month is July. Average-monthly temperatures range from about 49 to 81 degrees (°F), and the average-annual temperature is about 66 °F.

Rainfall during the 1994 calendar year was unusual because it was unequally distributed and well below average at two of the three stations. Rainfall at Bay Minette was 13.24 in. below average, and rainfall at Fairhope was 4.97 in. below average. Rainfall at Robertsdale was 1.24 in. above average. Temperatures during the 1994 calendar year were below normal during January, above normal from February to April, below normal from May to September, and above normal for November and December. For the calendar year as a whole, temperatures were 0.7 degrees below normal for Bay Minette, 1.1 degrees below normal at Robertsdale, and 0.8 degrees above normal at Fairhope.

Rainfall during the 1995 calendar year was well above normal due to rain associated with hurricane Erin on August 3 and hurricane Opal on October 4. Rainfall at Fairhope totaled 85.51 in. or 19.11 in. over normal. Temperatures extremes at Fairhope were a high of 99 °F, and a low of 23 °F, with an average of 67 °F; 1 degree above normal for the year. Weather data for calendar year 1995 for Bay Minette and Robertsdale were not available.

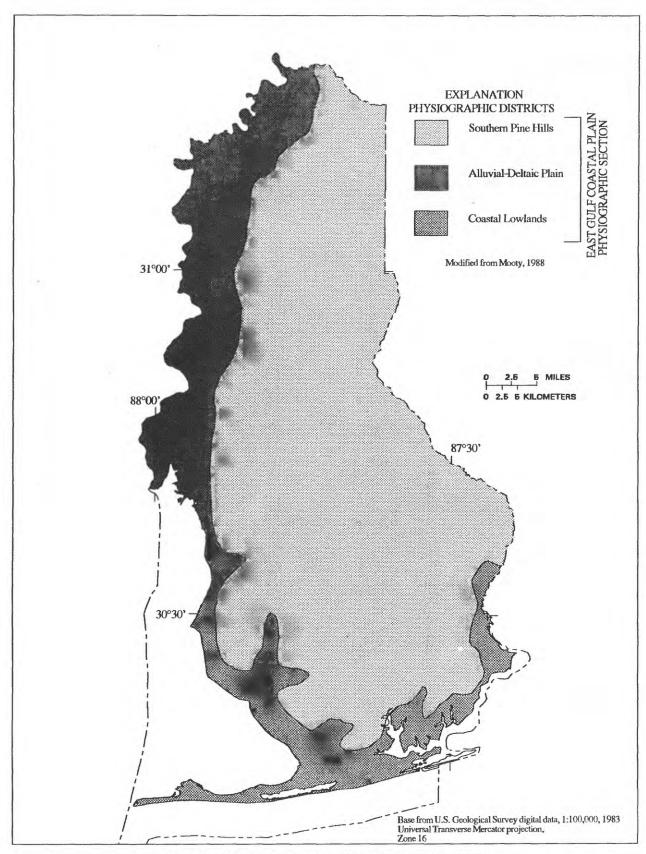


Figure 2.—Physiographic map of Baldwin County, Alabama.

Table 1. Average rainfall and temperature for stations in Baldwin County, Alabama (1961 -1990)

		Rainfall (inches)	Temperature (degrees Fahrenheit)			
	Bay Minette	Robertsdale	Fairhope	Bay Minette	Robertsdale	Fairhope
January	5.37	5.23	5.01	50.2	49.1	49.0
February	5.72	5.86	6.06	53.7	52.1	51.9
March	6.62	6.12	6.08	60.7	59.1	59.1
April	4.52	4.20	4.13	67.7	66.1	66.6
May	5.44	4.98	5.36	74.1	72.9	73.6
June	5.79	5.98	6.56	79.5	78.8	79.1
July	7.75	7.39	7.29	81.1	80.9	81.0
August	6.56	7.50	6.66	80.7	80.3	80.5
September	5.40	5.86	5.65	77.2	76.7	77.1
October	3.08	3.58	3.18	68.4	67.3	67.6
November	4.40	4.57	4.22	60.0	59.1	59.4
December	5.74	4.55	4.90	53.4	52.3	52.1
Annual	66.39	65.82	65.10	67.2	66.2	66.4

Surface-Water Drainage

The major surface-water drainages of Baldwin County are the Alabama, Tensaw, and Perdido Rivers (fig. 1). North of Bay Minette, the Little River, and Turkey, Majors, Halls, and Rains Creeks and Martins Branch flow west into the Tensaw or Alabama Rivers. South of Bay Minette a surface-water divide runs approximately down the center of the county. West of the divide, Bay Minette Creek, the Fish, Magnolia, and Bon Secour Rivers, and the tributaries Cowpen and Polecat Creeks flow into the Tensaw River or Mobile Bay. East of the divide the Styx and Blackwater Rivers, and Dyas and Hollinger Creeks flow into the Perdido River (fig. 1). The extreme southeastern section of Baldwin County is drained by localized creeks into Wolf Bay, Perdido Bay, or the Gulf of Mexico. The largest of these are Miflin, Wolf, and Sandy Creeks.

GEOLOGIC SETTING

The geologic formations of the Alabama Coastal Plain form a wedge of seaward thickening sedimentary deposits ranging in age from Late Cretaceous to Holocene. The sediments consist mainly of sand, gravel, silt, chalk, limestone, and sandstone (Davis, 1987). The freshwater-bearing sediments of Baldwin County, to a depth of about 800 ft (fig. 3), are composed of interbedded gravel, sand, silt, and clay of middle Miocene to Holocene age (Reed, 1971; Chandler and others, 1985; Raymond and others, 1993). The sand and gravel units compose the Miocene-Pliocene aquifer system. These aquifers generally are confined to semiconfined by the interbedded clay units (Chandler and others, 1985).

Most of the geologic structures in the subsurface of the Coastal Plain of Alabama (fig. 4) can be attributed to the movement of the underlying Louann Salt of Jurassic age (Davis, 1987). Vertical displacement along the Pollard fault in northeastern Baldwin County should be similar to displacements reported by Cagle and Newton (1963) in Escambia County; 300 ft for beds of Late Cretaceous age and 50 ft for beds of Eocene age. The Wiggins Uplift in Baldwin County is probably related to a deep salt core (McWilliams and Joiner, 1970), and gravity anomalies to the north and southwest of Tensaw are interpreted as faults associated with the Mobile Graben. Effects of the deep structures generally are masked by thick overlying sediments (McWilliams and Joiner, 1970).

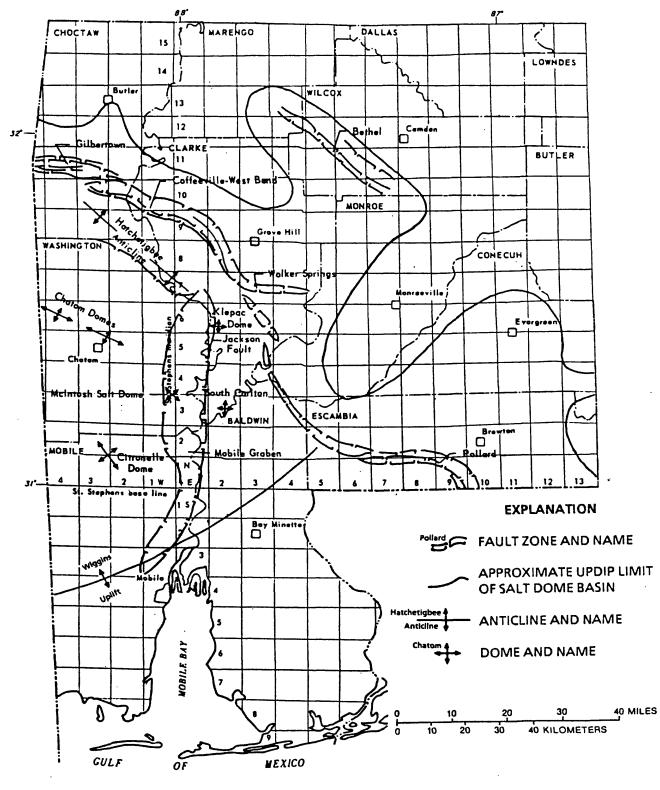
The dip of shallow sediments in southern Baldwin County is assumed to follow the surface of the Pensacola Clay (Walter and Kidd, 1979). The Pensacola Clay, a marine clay of middle Miocene age, is estimated to dip south 28 degrees west at a rate of 38 feet per mile (ft/mi). The Pensacola Clay is absent in northern Baldwin County, and no marker bed which could be used to determine a regional structural trend has been identified in the shallow subsurface; but the top of the Claiborne Group of Eocene age is reported by Davis (1987) to have a regional dip of about 50 ft/mi to the south-southwest. McWilliams and Joiner (1970) also report a regional dip for Baldwin County of 5 to 50 ft/mi to the south-southwest.

Recent studies by the Geological Survey of Alabama (Raymond, 1985; Smith, 1989, 1991; Raymond and others, 1993) have presented the results of detailed studies of the Miocene and post-Miocene subsurface stratigraphy in southern Baldwin County. Formally, sediments overlying the Pensacola Clay, excepting maximum thicknesses of 50 to 100 ft for the Citronelle Formation and recent river terrace and floodplain deposits, were classified as Miocene undifferentiated. Up to 500 ft of Pliocene age sediments are now mapped in the subsurface of southern Baldwin County by the Geological Survey of Alabama based on biostratigraphic studies (Raymond and others, 1993). Similar studies have not been made in northern Baldwin County.

Yield	Up to 10 gallons per minute			aquifer system of to 700 gallons per minute		Unknown. No wells in Baldwin County tap this unit. Potential yields of up to 350 gallons per minute in northern Baldwin County.
Lithology	Sand, white, gray, orange, and brown, very fine to coarse-grained; gravel; gray and orange sandy clay.		Sand, dark-reddish-brown, fine to coarse-grained; gravel, light-gray, orange, and brown sandy clay; ferruginous cemented sandstone.	Sand, white, yellow, orange, lightegray, thin to massively bedded;	Sand, white, yellow, orange, light-gray, brown, thin to massively bedded; sandy clay, clay, blue to gray.	Limestone, grayish-yellow and gray, fossiliferous; clay, gray and green.
Thickness (feet)	0-150		0-130	0-500	100-3,000	100-500
Geologic Unit	Alluvium, low terrace, and coastal deposits	High terrace deposits	Citronelle Formation	Undifferentiated deposits	Miocene Series undifferentiated	Undifferentiated
Series	Holocene and Pleistocene		Pliocene		Miocene	Oligocene

Modified from Chandler and others, 1985; Mooty, 1988; Raymond and others, 1993; Reed and McCain, 1971

Figure 3. Generalized geologic units in Baldwin County, Alabama, and their water-bearing properties and yields.



Modified from Davis 1987

Figure 4.—Location of prominent salt-related structural features in the Alabama Coastal Plain.

GROUND-WATER RESOURCES DATA

Well Inventory

A county-wide well inventory was performed to identify wells suitable for measuring ground-water levels. The objective of this work was to lay the groundwork for constructing a water-level map for the Miocene-Pliocene aquifer system in Baldwin County. Data for 237 wells are included in this report. Water-level measurements were made in 223 of these wells, and historic water-level data are available for many of the wells. Driller's logs, geologic logs, geophysical logs, aquifer-test or well-performance data, and water-quality data were also collected when possible.

Well Numbering System

The well-numbering system used in this report is based on the Federal system of subdivision of public lands. Each township is divided into 36 sections numbered from 1 in the northeast corner to 36 in the southeast corner. Each township is assigned a letter in the same order that sections are numbered from "A" through "Z," with "A" being assigned to the northeasternmost equal township and "Z" to the southeasternmost township. Letter designations are doubled or tripled as needed. Wells in each subdivision are numbered consecutively such as K-5.....K-9 (fig. 5) in the order that the wells are inventoried. Other numbering systems have been used in previous studies of Baldwin County. For this reason, many wells inventoried in this report have other number designations, in most cases assigned by the Geological Survey of Alabama.

Well-Site Data

Basic data for all wells used in this study are listed in Appendix 1 by well number. Included in Appendix 1 are data describing owner, location, construction, altitude of land surface, water-level measurements, date of measurement, and use of the water. Well location and land-surface altitude were determined by site visit and locating the well on both USGS 7 1/2-minute quadrangle maps (1 in. = 24,000 in.) and county road maps of various scales. Site locations generally are considered accurate to within about 100 ft. The accuracy of the land-surface altitude is dependent on the contour interval of the USGS 7 1/2-minute map and the accuracy of the estimated location. Land-surface altitude is considered accurate to within plus or minus 2.5 ft for most wells, and to within 5 ft for all wells. Land-surface altitude for seven wells was determined either by previous studies or during this study by standard survey leveling. The locations of selected inventoried wells are shown on figure 6.

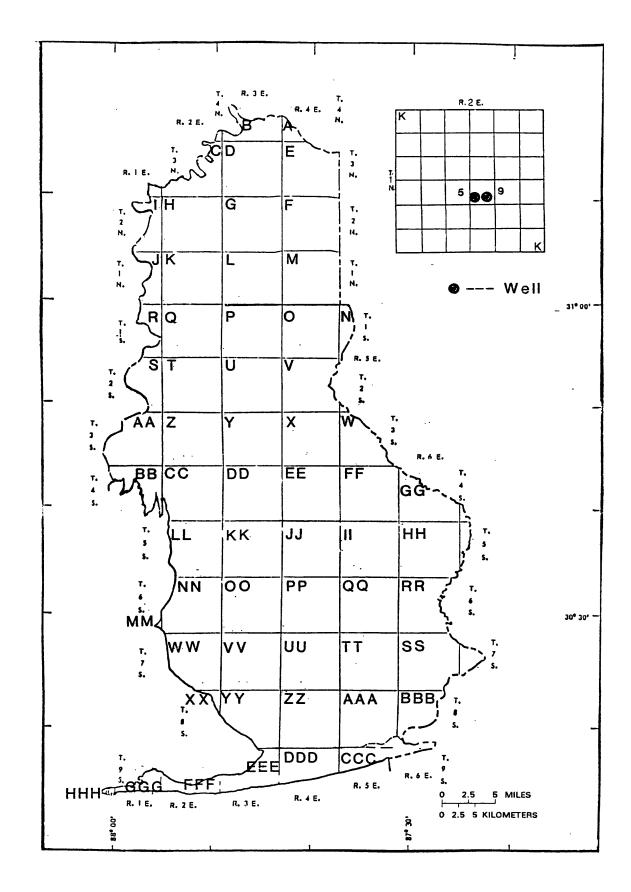


Figure 5.—Well numbering system used in this report.

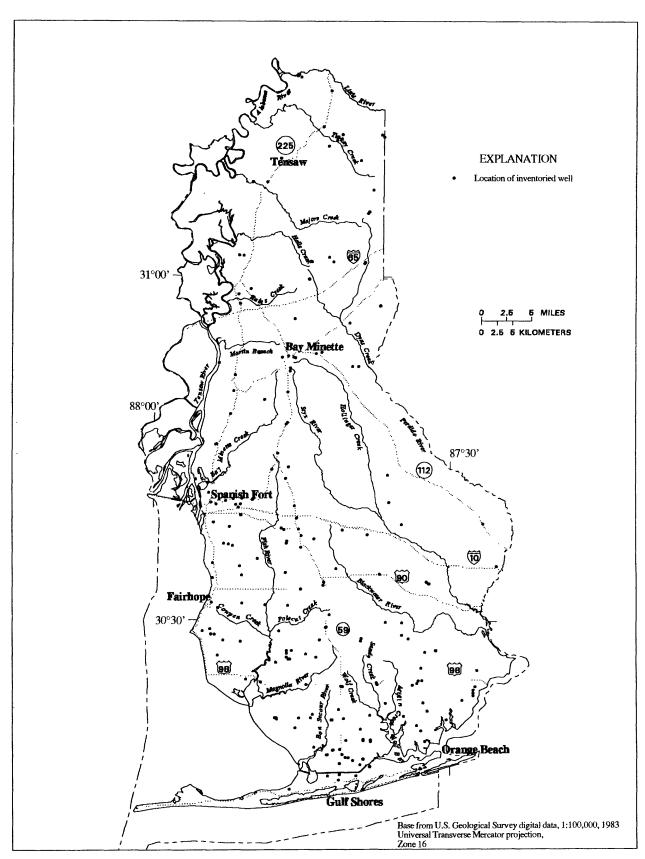


Figure 6.—Location of selected inventoried wells.

Ground-Water Use

The Miocene-Pliocene aquifer system is currently the sole source of public-water supply in Baldwin County. It is also heavily utilized for self-supplied domestic, agricultural, and recreational purposes. The aquifer system can yield up to 1 Mgal/d to properly constructed wells. Wells supplying private homes rarely need be more than 200 ft deep, with the most common depth being about 100 ft. Public-supply wells generally are between 100 and 300 ft deep.

The estimated average daily ground-water use by category in Baldwin County in 1995 was based on most recent (1990) tabulations of water use in Alabama (Baker and Mooty, 1993) and the Alabama Department of Economic and Community Affairs (ADECA) water-use reporting program that began in 1993. The ADECA program requires reporting for all uses over 100,000 gallons per day (gal/d). Ground-water use data for Baldwin County from Baker and Mooty (1993) and the ADECA water-use reporting program are summarized in table 2. Total estimated ground-water use in Baldwin County is about 41 Mgal/d. Agricultural use accounts for about 68 percent, public water supply accounts for about 30 percent, and the other 2 percent is for self-supplied domestic, commercial, and industrial uses. Major centers of ground-water withdrawal in Baldwin County are shown on figure 7.

Table 2. Estimated average daily ground-water use by category in Baldwin County, Alabama, 1995

Water-use category	Average daily water use (million gallons per day)	Source
Public water supply	12.2	ADECA Water-use program
Self-supplied commercial	.1	Baker and Mooty, 1993
Self-supplied industrial	.1	Baker and Mooty, 1993
Agricultural	27.9	ADECA Water-use program
Self-supplied domestic	.6	Baker and Mooty, 1993
Total	40.9	

Ground-Water Levels

Water-level measurements were made in 223 of the 237 wells inventoried for this study. These data were summarized in the form of a map of the potentiometric surface of the Miocene-Pliocene aquifer system (Robinson and others, 1996). Ground-water levels ranged from a high of 259 ft above sea level near the Baldwin County/Escambia County border to about sea level at some locations near the Gulf Coast. A ground water high is oriented roughly north-south along a line that extends from the Baldwin County/Escambia County border to about 10 miles south of Bay Minette. A pronounced area of low ground-water levels occurs in the Spanish Fort Area. Ground-water levels along the entire Gulf Coast of Baldwin County were less than 5 ft above sea level during October and November 1995.

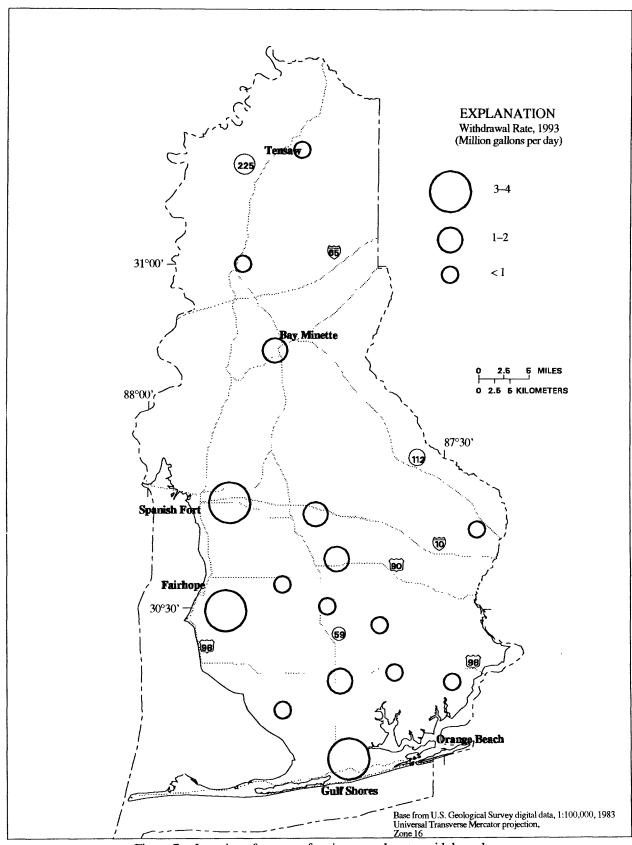


Figure 7.—Location of centers of major ground-water withdrawals.

At many locations, multiple wells completed at different depths were measured. These data provided information about vertical ground-water gradients within the ground-water system (fig. 8). In general, ground-water levels decreased with depth in most areas of Baldwin County. This indicates a potential for aquifer recharge in these areas. Near the Gulf Coast, major rivers, and Mobile Bay, ground-water levels increase with well depth indicating discharge areas for the ground-water system. Table 3 presents water-level data for selected well clusters in Baldwin County, and figure 8 shows the locations of those well clusters.

In November 1994, a continuous water-level recorder was installed in well ZZ-10, an inactive well of the city of Gulf Shores. The mean daily water-level in well ZZ-10 (fig. 9) shows the effects of ground-water withdrawals and seasonal rainfall patterns. Short term water-level fluctuations probably represent the effects of nearby pumping from the aquifer for agricultural irrigation. Long term trends result from the effects of seasonal rainfall. In general, water levels in well ZZ-10 declined from late spring to late summer, and rose from late summer until mid-spring. The lowest water levels occurred during the tourist season, when pumping for public supply was greatest.

Historic ground-water level data were collected from the files of the Geological Survey of Alabama, USGS, and from the public-water suppliers in Baldwin County. These data are presented in table 4. No significant long-term trends were indicated by the historic water-level data, except for the Spanish Fort and Daphne areas where a water-level decline of 35 ft from 1966 to 1991 was observed in the Miocene-Pliocene aquifer system (fig. 10). Water-level measurements in well LL-6 (fig. 10) in 1992 and 1994 suggest that water levels in the Miocene-Pliocene aquifer may be recovering.

Table 3. Records for selected well clusters in Baldwin County, Alabama [Source of water-level data: (1) USGS; (2) Griner Drilling Service, Inc.]

Local number	Altitude of land surface (feet)	Depth of well (feet)	Depth of screened interval below land surface (feet)	Depth to water level below land surface (feet)	Date of water level measure- ment	Distance between wells (feet)	Source of water-level data
F-12	310	72	to 72	3.3	44.04.04	•	
F-11	310	130	to 130	59.3	11-01-95	200	1
O-7	232	60	to 60	37.6	11-01-95	5 00	
O-8	230	140	to 140 43.3		11-03-95	500	1
P-8	272	110	to 110	7 9.9			
P-9	272	197	to 197	83.6	04-10-95	50	1

Table 3. Records for selected well clusters in Baldwin County, Alabama--Continued [Source of water-level data: (1) USGS; (2) Griner Drilling Service, Inc.]

Local number	Altitude of land surface (feet)	Depth of well (feet)	Depth of screened interval below land surface (feet)	Depth to water level below land surface (feet)	Date of water level measure- ment	Distance between wells (feet)	Source of water-level data
U-18	270	40	to 40	39.0			_
U-6	279	256	197 to 250	82.8	10-31-95	300	1
CC-17	205	60	40 to 60	42.9	40.04.05	200	
CC-18	205	335	305 to 335	136.8	10-24-95	300	1
CC-21	150	170	150 to 170	82.4			
CC-23	160	386	366 to 386	144.2	11-06-95	1,800	1
NN-16	94	96	to 96	63.9	11-17-94		
NN-15	90	230	110 to 120 129 to 154 195 to 220	68.9	09-13-94	1,700	1
PP-8	118	30	to 30	13.7			
PP-5	115	146	75 to 85 120 to 130	12.9	10-23-95	800	1
QQ-12	115	52	to 52	40.3	10-25-95		
QQ-11	121	105	80 to 100	63.1	10-26-95	}1,600	1
QQ-13	122	225	205 to 225	81.9	10-25-95	} 100	
TT-11	85	60	to 60	10.0			
TT-12	88	200	126 to 196	26.8	10-25-95	2,000	1
TT-18	75	65	to 65	7.2	04-21-95		
TT-15	84	390	355 to 380	42.5	04-12-95	5,600	1

Table 3. Records for selected well clusters in Baldwin County, Alabama--Continued [Source of water-level data: (1) USGS; (2) Griner Drilling Service, Inc.]

Local number	Altitude of land surface (feet)	Depth of well (feet)	Depth of screened interval below land surface (feet)	Depth to water level below land surface (feet)	Date of water level measure- ment	Distance between wells (feet)	Source of water-level data	
VV-20	80	45	to 45	31.0				
VV-17	82	150	to 150	26.2	10-24-95	1,200	1	
YY-12	56	~200	to ~200	23.4		-		
YY-13	62	500	420 to 500	35.1	10-23-95	2,100	1	
YY -16	40	110	90 to 110	21.9				
YY-15	39	188	to 188	20.9	10-23-95	1,200	1	
YY-19	53	57	to 57	17.8				
YY-18	54	220	to 220	29.7	10-23-95	50	1	
ZZ-12	30	125	85 to 125	16.1				
ZZ -13	26	428	324 to 366 386 to 428	17.1	10-23-95	1,200	1	
ZZ -28	52	256	226 to 256	28.2	11-30-94			
ZZ -29	52	435	396 to 435	20.4	11-02-94	50	2	
DDD-37	10	120	100 to 120	7.4				
DDD-42	7	370	330 to 370	2.2	10-24-95	100	1	
DDD-39	9	407	331 to 407	2.0				

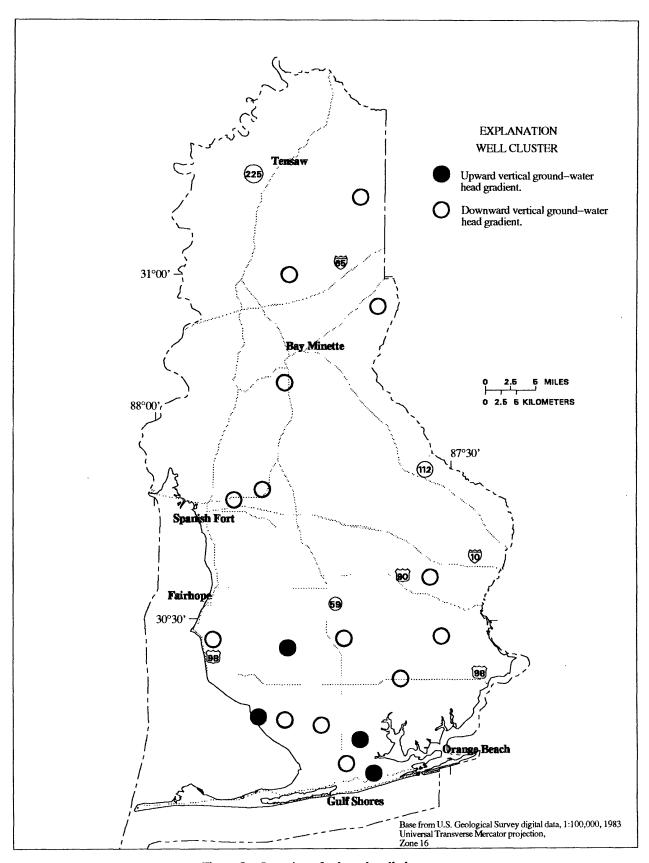
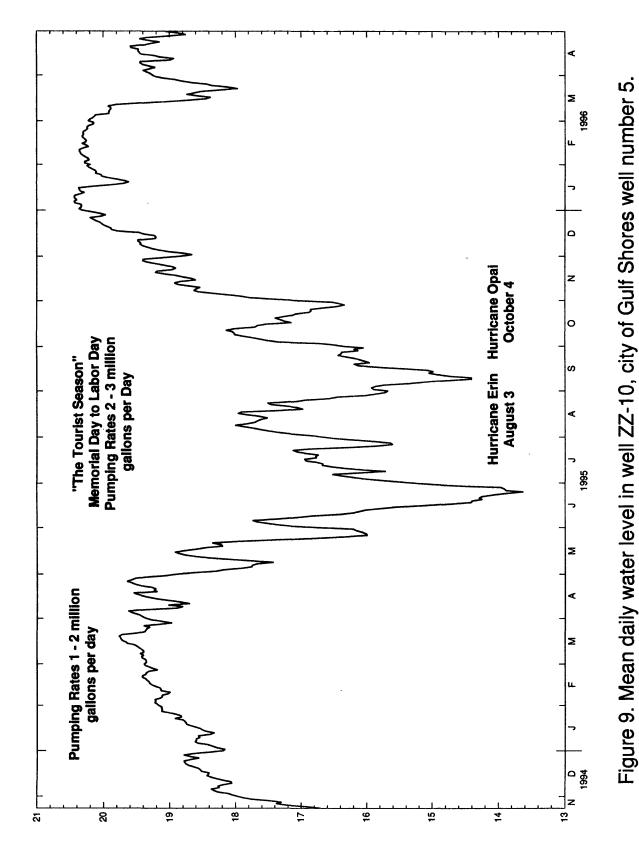


Figure 8.—Location of selected well clusters.



Water level in feet above sea level

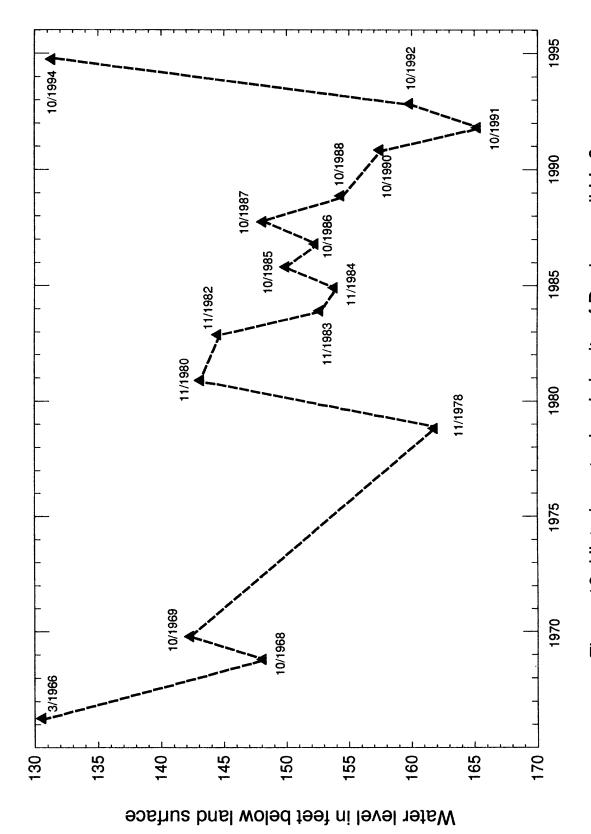


Figure 10. Historic water levels in city of Daphne well LL-6.

Table 4. Historic water-level records for selected wells in Baldwin County, Alabama (Source: D, driller; GSA, Geological Survey of Alabama; O, Owner; USGS, U.S. Geological Survey)

Local number	Altitude of land surface (feet)	Depth (feet)	Water level below land surface (feet)	Date of water level measure- ment	Source of data	Remarks
D-11	160	353	101.1 101.7 101.9 100.2 102.2 102.0	08/66 10/70 10/74 11/80 11/82 10/95	USGS USGS USGS USGS USGS USGS	Formerly listed as G-1 with a depth of 235 feet, drilled 1963, sounded to 353 feet 10-31-95 after pump removed
M-6	270	260	90.0 90.7 76.8 83.1 78.5 98.2 101.8 98.3	09/49 10/68 10/70 10/74 11/77 11/80 11/82 11/84	D USGS USGS USGS USGS USGS USGS	Well destroyed 1985.
U-11	265	185	68.0 65.3 71.0 67.6 70.0 74.5	03/65 07/66 10/75 11/83 07/93 10/94	D USGS D USGS D USGS	City of Bay Minette well number 3, drilled 1965.
CC-5	152	309	111.0 109.6 130.0 127.7 129.1	07/65 03/66 10/94 04/95 10/95	D USGS USGS USGS USGS	Spanish Fort well number 1, drilled 1964.
CC-15	200	364	165.0 186.0	04/90 10/94	D USGS	Spanish Fort well number 3, drilled 1990.
CC-21	150	170	62.0 82.4	01/92 11/95	D USGS	Pumphouse well, drilled 1992.

Table 4. Historic water-level records for selected wells in Baldwin County, Alabama--Continued (Source: D, driller; GSA, Geological Survey of Alabama; O, Owner; USGS, U.S. Geological Survey)

Local number	Altitude of land surface (feet)	Depth (feet)	Water level below land surface (feet)	Date of water level measure- ment	Source of data	Remarks
CC-22	170	345	60.0 146.5	06/93 11/95	D USGS	Recreation center well, drilled 1993.
CC-23	160	386	110.0 144.2	06/92 11/95	D USGS	#11 Tee well, drilled 1992.
KK-3	171	184	40.0 45.4 50.0 46.0 50.5	1959 05/66 1972 1976 10/95	D GSA GSA GSA USGS	City of Loxley well number 1, drilled 1959.
KK-11	172	160	43.0 43.4 43.3 45.5 49.4	10/83 06/91 10/94 04/95 10/95	D GSA USGS USGS USGS	Private irrigation well in same zone as city of Loxley public-supply well KK-03.
LL-6	153	442	130.5 148.3 142.3 162.0 143.1 144.7 152.7 154.0 149.9 152.6 148.1 154.4 157.5 165.5 160.0 131.4	03/66 10/68 10/69 11/78 11/80 11/82 11/83 11/84 10/85 10/86 10/87 10/88 10/90 10/91 10/92 10/94	USGS GSA GSA GSA GSA GSA GSA GSA GSA GSA	Daphne supply well, inactive. Data illustrated in figure 10 of this report.

Table 4. Historic water-level records for selected wells in Baldwin County, Alabama--Continued (Source: D, driller; GSA, Geological Survey of Alabama; O, Owner; USGS, U.S. Geological Survey)

Local number	Altitude of land surface (feet)	Depth (feet)	Water level below land surface (feet)	Date of water level measure- ment	Source of data	Remarks
LL-11	145	315	48.5 66.6	06/59 10/95	D USGS	Formally Lake Forest Utilities well. Daphne well number 5, drilled 1959.
PP-2	143	171 260	32.0 39.2 38.9 37.3 38.4 34.7 35.7 34.8	09/49 05/66 10/69 10/74 11/80 11/83 09/94 10/95	USGS USGS USGS USGS USGS USGS USGS	City of Robertsdale well number 2, drilled 1944, redrilled and deepened 1958.
PP-5	115	146	24.0 8.7 11.0 12.8	11/55 03/66 03/84 10/95	D USGS GSA USGS	Town of Summerdale public-supply well.
UU-9	78	148	20.0 24.0 24.0 29.0 20.0 29.0 27.0 22.0 27.0 21.0 21.1	05/54 03/66 08/70 01/75 05/80 08/83 05/86 05/90 10/90 10/94 04/95	D USGS O O GSA O O USGS USGS	City of Foley well number 7.
ZZ-8	41	218	44.0 43.0 46.0 44.0 37.7	10/90 10/91 10/92 10/93 10/95	O O O USGS	City of Gulf Shores well number 6.

Table 4. Historic water-level records for selected wells in Baldwin County, Alabama--Continued (Source: D, driller; GSA, Geological Survey of Alabama; O, Owner; USGS, U.S. Geological Survey)

Remarks	Source of data	Date of water level measure- ment	Water level below land surface (feet)	Depth (feet)	Altitude of land surface (feet)	Local number
Orange Beach W&FPA well number 2	D	06/81	5.6	120	10	DDD-37
-	GSA	11/83	3.3			
	GSA	10/87	3.2			
	GSA	10/88	1.8			
	GSA	10/89	3.0			
	GSA	10/90	6.5			
	GSA	10/93	5.1			
	USGS	10/95	7.4			
Gulf Shores State Park Golf Course	D	1971	21.0	153	21	DDD-44
rrigation well.	GSA	04/84	22.5			
-	GSA	06/84	23.5			
	GSA	03/87	21.3			
	GSA	07/87	20.3			
	USGS	09/94	18.7			

Ground-Water Quality

The quality of the water in the Miocene-Pliocene aquifer system generally is good, and many self-supplied homeowners use ground water with no treatment. Water-quality data for all of Baldwin County were published by Reed and McCain (1971); Walter and Kidd (1979) and Chandler and others (1985) published water-quality data for southern Baldwin County.

In general, ground water is more acidic in the southern part of the county. Ground water with dissolved-solids content exceeding 1,000 milligrams per liter (mg/L), a chloride content of 500 mg/L, and having a sulfurous odor occurs in the areas adjacent to the Mobile River and locally near the Gulf of Mexico. Ground-water quality in the inland areas is acidic and low in mineral content. In coastal areas, hydrogen sulfide and methane may occur. Problems with iron and sulfur occur in the Spanish Fort and Orange Beach areas. The results of chemical analyses of water from selected wells in Baldwin County are presented in table 5. The well locations are shown on figure 11.

Laboratory codes: (1) Alabama State Department of Public Health - Bureau of Sanitation; (2) Alabama State Environmental Health Administration Laboratory; (3) Gulf Coast Laboratories, Inc.; (4) International Filter Company; (5) Leonard, R.H.; (6) Orlando Laboratories, Inc.; (7) Pensacola Testing Laboratories; (8) Pioneer Laboratory, Inc.; (9) Savannah Laboratories and Environmental Services, Inc.; (10) Thompson Engineering Testing, Inc. *, Exceeds maximum contaminant levels established by Alabama Department of Environmental Management, 1994; TDS, total dissolved solids; mg/L, milligrams per liter; --, no data; <, less than] Table 5. Physical and chemical properties of ground water from selected wells in Baldwin County, Alabama

Laboratory code and	date sampled	9 05-18-90	2 04-11-73	4 07-11-38	8 12-13-83	3 01-11-65	9 10-07-93	10 07-24-84	7 11-05-74	3
		-90	04-1	07-1	12-1	01-1	10-0	1 07-2	11-0	
NO3	as in (mg/L)	7	.02	ŀ	1.6	ł	~ 1	<.05	ľ	0
Fe	(mg/L)	0.19	.45*	<u></u>	.07	1.8*	1.4*	.047	.075	.75*
Mn	(mg/L)	0.014	%	7	.01	0.	*980.	1	1	.12*
K	(mg/L)	ŀ	ı	;	:	:	; ·		1	:
C	(mg/L)	160	6.0	1	14	7	9.6	8.9	4	5.5
SO4	(mg/L)	7.0	8.4	ł	7	9	6.0	1	3	9.9
нсо3	(mg/L)	ł	1	ŀ	3.7	i	:	ı	7.3	;
Na	(mg/L)	160	ì	ŀ	7.3	1	70	1	1	1
Mg	(mg/L)	2.7	ı	;	1.4	1	2.1	1	0	∞.
Ca	(mg/L)	5.6	2.4	:	1.6	1	9.9	1	3	8.0
Hardness as	CaCO3 (mg/L)	25	∞	∞	10	20	25	;	;	23
TDS	(mg/L)	400	1	26	32	139	120	1	21	115
pH (stan-	dard units)	8.0	7.3	5.2	6.07	9:9	6:9	5.6	5.65	8.9
Depth	(feet)	328-378 388-410	168-199	207-229	170-290 205-255	265-305	308-349	140-180	140-180	365-390
Local	number (fig. 11)	G-5	K-9	5. - - 25	U-15	CC-5	CC-14	KK-8	LL-10	NN-3

[Laboratory codes: (1) Alabama State Department of Public Health - Bureau of Sanitation; (2) Alabama State Environmental Health Administration Laboratory; (3) Gulf Coast (9) Savannah Laboratories and Environmental Services, Inc.; (10) Thompson Engineering Testing, Inc. *, Exceeds maximum contaminant levels established by Alabama Laboratories, Inc.; (4) International Filter Company; (5) Leonard, R.H.; (6) Orlando Laboratories, Inc.; (7) Pensacola Testing Laboratories; (8) Pioneer Laboratory, Inc.; Table 5. Physical and chemical properties of ground water from selected wells in Baldwin County, Alabama--Continued Department of Environmental Management, 1994; TDS, total dissolved solids; mg/L, milligrams per liter; --, no data; <, less than]

Laboratory code and date	5 03-09-82	5 04-26-82	8 04-28-87	5 03-22-74	9 08-13-90	8 08-05-84	8 04-12-84	8 08-10-84	9 12-19-94	9 11-03-94
NO3 as N (mg/L)	1.8	.40	.73	:	7	.15	.315	.15	<.10	<.10
Fe (mg/L)	0.04	.10	90:	.15	.23	*64.	.33*	.16	.23	*86.
Mn (mg/L)	0.02	.01	<.01	00:	.023	600.	.010	.015	.013	.028
K (mg/L)	0.3	ιż	<.01	'n	;	ı	ı	ı	·	ŀ
Cl (mg/L)	7	٠,	3.4	4	5.8	7	8.2	4.3	6.3	3.5
SO4 (mg/L)	<1.0	1	7	4.1	6.2	3.8	3.8	3.8	3.9	4.9
HCO3 (mg/L)	-	:	ı	ı	ı	0	1	3.7	ŀ	ſ
Na (mg/L)	4.0	3.1	2.2	3.0	4.2	4.6	5.3	2.8	4.0	8.1
Mg (mg/L)	1.9	1.2	<.01	9.	% :	.48	:	96:	<.50	1.2
Ca (mg/L)	8: 0	9.	7.	1.0	1.3	∞;	ŀ	1.2	9.	2.9
Hardness as CaCO3	(7/8m) 	;	2	4.9	6.5	4	4	7	3.4	12
TDS (mg/L)	48	:	10	;	73	18	25	17	. 48	190
pH (stan- dard	5.75	5.5	5.17	5.8	5.8	4.09	6.2	5.08	4.4	0.9
Depth screened (feet)	110-120	195-220 131-186	150-210	240-270	244-266 290-330	163-213	235-245	270-310	226-256	396-435
Local well number	NN-15	00-4	<i>L</i> -44	SS-15	6-WM	8-ZZ	ZZ-10	ZZ-10	ZZ-28	ZZ-29

[Laboratory codes: (1) Alabama State Department of Public Health - Bureau of Sanitation; (2) Alabama State Environmental Health Administration Laboratory; (3) Gulf Coast (9) Savannah Laboratories and Environmental Services, Inc.; (10) Thompson Engineering Testing, Inc. *, Exceeds maximum contaminant levels established by Alabama Laboratories, Inc.; (4) International Filter Company; (5) Leonard, R.H.; (6) Orlando Laboratories, Inc.; (7) Pensacola Testing Laboratories; (8) Pioneer Laboratory, Inc.; Table 5. Physical and chemical properties of ground water from selected wells in Baldwin County, Alabama--Continued Department of Environmental Management, 1994; TDS, total dissolved solids; mg/L, milligrams per liter; --, no data; <, less than]

Laboratory code and date sampled	9 09-26-95	5 07-00-77	1 12-11-67	3 12-12-67	6 06-00-81	6 11-00-83	6 04-11-79
NO3 as N (mg/L)	<.10	ı	0.	;	.03	<.02	.21
Fe (mg/L)	0.29	0 .	.02	80.	.14	.28	.75*
Mn (mg/L)	<.01	0.	ı	0	<.05	<.05	<.05
K (mg/L)	;	0.0	;	;	;	;	;
CI (mg/L)	6.1	2	14	4	9	12	7
SO4 (mg/L)	5.1	£;	4	6	<1.0	18.5	∞
HCO3 (mg/L)	1	ı	ı	1	15	43.9	46.
Na (mg/L)	3.1	3.4	i	1	8.7	9.3	6.9
Mg (mg/L)	<.50	7.	:	:	7.	1.45	2.7
Ca (mg/L)	1.4	1.5	∞i	;	3.6	6.97	9.6
Hardness as CaCO3 (mg/L)	6.9	4	I	I	12	30.8	35
TDS (mg/L)	32	;	ı	99	38	70	75
pH (stan- dard units)	5.2	5.4	5.3	5.0	5.0	9:9	6.1
Depth screened (feet)	280-320	260-300	103-128	103-128	100-120	331-407	330-370
Local well number (fig. 11)	AAA-22	BBB-17	DDD-34	55-DDD-34	DDD-37	DDD-39	DDD-42

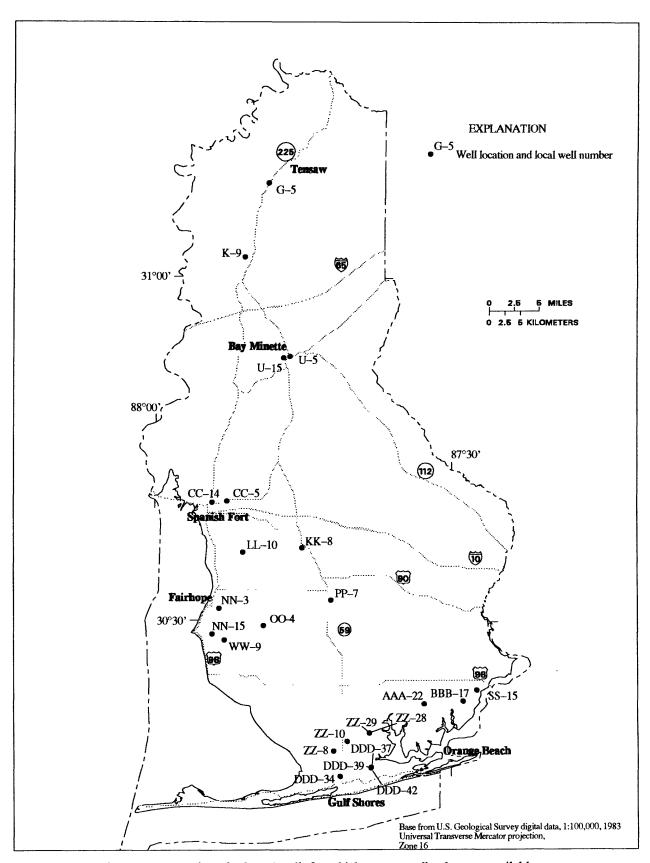


Figure 11.—Location of selected wells for which water-quality data are available.

Aquifer Test Results

Prior estimates of the hydraulic characteristics of the Miocene-Pliocene aquifer system, reported by Walter and Kidd (1979), give a range of transmissivity from 1,150 to 2,400 feet squared per day (ft²/d) and storage coefficients ranging from 0.00014 to 0.00115. During this study, hydraulic characteristics for the Miocene-Pliocene aquifer system of Baldwin County were estimated at 10 locations using data from 11 wells (table 6). All of the aquifers tested were confined.

All but one of the aquifer tests were single-well tests. In general, only moderate confidence can be placed on the results of a single-well test, and transmissivity is the only hydraulic characteristic that can be estimated. A multi-well aquifer test was performed for the city of Loxley public-supply well number 2 (KK-8) by the Geological Survey of Alabama (Jackle and others, 1993). It was possible to estimate the transmissivity and storage coefficient of the aquifer at this location.

Estimates of aquifer transmissivity in Baldwin County ranged from 700 to 5,400 ft²/d. Transmissivities were greatest in the southeastern part of the county, and least in the western part of the county near Mobile Bay (fig. 12). A storage coefficient of 0.0015 was determined for the Miocene-Pliocene aquifer near Loxley.

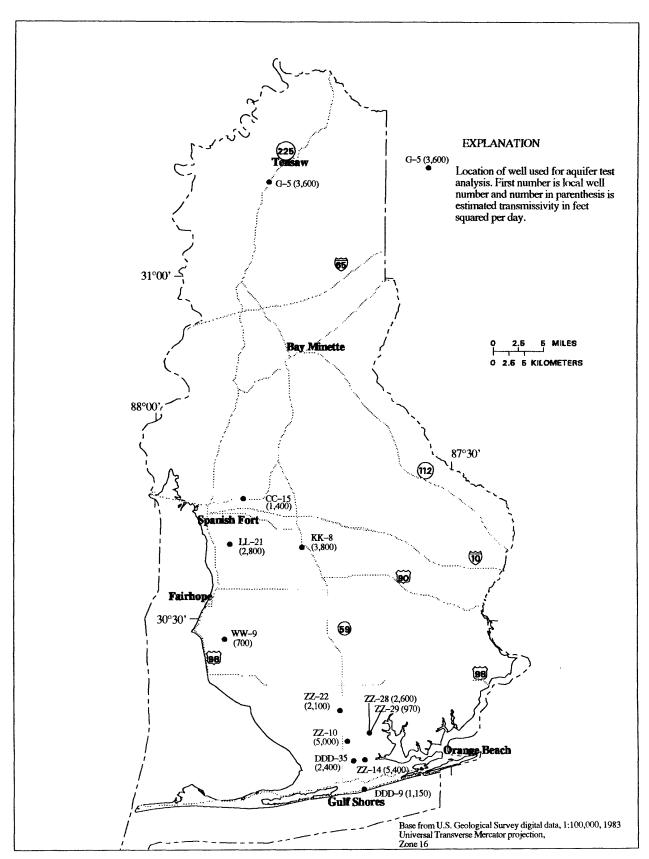


Figure 12.—Location of selected wells for which aquifer test analyses were performed.

Table 6. Results of aquifer test analyses for selected wells in Baldwin County, Alabama [Source of analysis: USGS, U.S. Geological Survey; GSA, Geological Survey of ALabama; ft²/d, feet squared per day]

Well number (fig. 12)	Date of test	Transmissivity (ft²/d)	Storage coefficient	Method of analysis	Source of analysis
G-5	May 1990	3,600	not available	modified non- equilibrium	USGS
CC-15	May 1990	1,440	not available	modified non- equilibrium	USGS
KK-8	May 1991	3,800	.0015	Theis non- equilibrium	USGS
LL-21	November 1991	2,800	not available	modified non- equilibrium	USGS
ww -9	September 1990	700	not available	modified non- equilibrium	USGS
ZZ-1 0	August 1984	5,000	not available	modified non- equilibrium	USGS
ZZ-14	May 1989	5,400	not available	modified non- equilibrium	USGS
ZZ -22	November 1994	2,100	not available	modified non- equilibrium	USGS
ZZ-28	November 1994	2,600	not available	modified non- equilibrium	USGS
ZZ-29	November 1994	970	not available	modified non- equilibrium	USGS
DDD-9	January 1978	1,150	.00007	Black and Kipp, 1977	GSA
DDD-35	January 1977	2,400	.00014	Theis	GSA

SUMMARY

Baldwin County lies within the East Gulf Coastal Plain physiographic section. The major surface-water drainages are the Alabama, Tensaw, and Perdido Rivers. The freshwater-bearing sediments are composed of interbedded gravel, sand, silt and clay. These aquifers generally are confined to semiconfined by the interbedded clay units.

The Miocene-Pliocene aquifer system is currently the sole source of public-water supply in Baldwin County. It is also heavily utilized for self-supplied domestic, agricultural, and recreational purposes. Wells supplying private homes rarely need be more than 200 feet deep, with the most common depth being about 100 feet. The depth of public-supply wells generally ranges between 100 and 300 feet.

The ground-water resources data presented in this report represent conditions for the Miocene-Pliocene aquifer system for the period of September 1994 to November 1995. Total daily withdrawal from the Miocene-Pliocene aquifer system was estimated to be 41 million gallons per day. Agricultural use accounts for about 68 percent, public water supply accounts for about 30 percent, and the other 2 percent is for self-supplied domestic, commercial, and industrial uses.

Comparison of historic and current ground-water level data indicate that there has been no significant decline in ground-water levels in most of Baldwin County. This suggests that current ground-water use levels in Baldwin County are sustainable. However, ground-water levels may be declining in the general area of Spanish Fort and Daphne. Ground-water levels in the Gulf Shores and Orange Beach areas are less than 5 feet above sea level in places.

Water quality generally is good, and many self-supplied homeowners use ground water with no treatment. Problems with water quality occur near the Mobile River, Spanish Fort, and Orange Beach areas.

The transmissivity of the Miocene-Pliocene aquifer system of Baldwin County, estimated at 10 locations using pump test data from 11 wells, ranged from 700 to 5,400 feet squared per day. Transmissivities were greatest in the southeastern part of the county, and least in the western part of the county near Mobile Bay.

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Appendix 1
Records for selected wells in Baldwin County, Alabama, 1996.

Records for selected wells in Baldwin County, Alabama, 1996

Geographic coordinate number: Latitude (DDMMSS), Longitude (DDDMMSS), and sequence number (01, 02, etc.).

Driller: (1) Acme Drilling Co., (2) Ala. Hwy. Dept., (3) Alms Pump Service, Inc., (4) Alsay Pippin Corp., (5) Byrds Well and Pump Supply Co., (6) David Cain, (7) Carloss Well Supply Co.,

(8) Coffey Well Drilling, (9) D&H Well Co., (10) John H. Davis, (11) Deep Well Drilling Co., (12) Dugger Drilling Co., (13) Etheridge Plumbing Co., (14) Graves Well Drilling Co.,

(15) Gray Artesian Well Co., (16) Griner Drilling Service, Inc., (17) Holland Well Co., (18) Layne Central Co., (19) J.A. Mosely, (20) Ponder Drilling Co., (21) Pope Engineering,

(22) Powell Drilling Co., (23) Terry's Well Service, (24) Uriah Drilling Co., (25) Weldon Drilling Co., (26) E.C. White, (27) David Wilson, (28) Windham and Sons Pump and Supply Co.,

(29) Unknown.

Depth of well: Depth of well given in feet below land surface.

Water level: Measured water levels are in feet and tenths (rounded) above or below land surface; negative water level indicates water level above land surface.

Altitude of land surface: Altitudes given in feet above sea level, from topographic maps; altitudes given in feet and tenths determined by standard survey leveling.

Date of measurement: month/day/year.

Method of lift: F, flowing; J, jet; N, none; R, rotary; S, submersible; T, turbine.

Use of well: Ag, agriculture; C, commercial; D, domestic; F, fire protection; I, industrial; In, institutional; Ir, irrigation; M, monitoring; O, observation; P, public supply; R, recreation;

S, stock; T, test; U, unused.

Remarks: gal/min, gallons per minute

Remarks	Drilled 1995	Supplies dairy	Lumber yard at Dixie Landing	do.
Use	릅	S	C	ပ
Lift	S	S	S	S
Date	10-11-95 10-30-95	10-11-95	10-11-95 10-30-95	10-11-95 10-30-95
Water level above or below land surface (feet)	68.0 68.2	27.4	9.5 17.5	23.1 28.0
Altitude of land surface (feet)	115	37	25	35
Diameter (inches)	4	4	4	4
Depth of well (feet)	155	~20		
Driller	5	26	'n	ν.
Owner	Little River Church	P. Cox	Scott Paper	do.
Geographic coordinate number	311618087422301	311728087452801	311742087454301	311735087455001
Local	A-5	B-3	B-4	B-5

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Local	Geographic coordinate number	Owner	Driller	Depth (fæt)	Diameter (inches)	Altitude of land surface (feet)	Water level above or below land surface (feet)	Date	Lift	Use	Remarks
D-9	311309087430902	T. Bradley	24	~210	4	173	114.0	10-31-95	S	Δ	Drilled 1982
D-10	311021087472902	Campbell	29		4	160	108.1 108.2	04-28-95 10-31-95	S	Ω	
D-11	311021087472901	do.	13	353	4	160	101.5	04-28-95 10-31-95	z	n	Formerly listed as G-1, drilled 1963
æ- ⊞	311227087371101	T. Frazier	26	340	4	310	174.3	04-20-95	S	Q	Drilled 1987, pumped 20 gal/min
E-9	311228087411201	Hughes Eastem	29	~350	4	210	115.4 114.4 114.2	01-31-95 04-17-95 10-31-95	S	Ι	Drilled for Oil and Gas permit 3039
E-10	311216087413801	do.	29	399	4	120	27.1 26.7 27.0	01-31-95 04-18-95 10-31-95	S	n	Drilled for Oil and Gas permit 3202
E-11	311158087414501	Matthews	16	412	ĸ	100	-1.1	10-30-95	z	n	Drilled for Oil and Gas permit 2925
E-12	311128087423501	do.	v	200	4	240	112.8 112.9	10-11-95 10-30-95	S	D,C	Matthews Hunting Camp
F-11	310542087382401	B. Biggs	Ŋ	130	4	310	61.0 59.3	04-10-95 11-01-95	S	D,Ag	

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Lift Use Remarks	n	D,Ag	U Drilled for Oil and Gas permit 1742	D	P Pumped 226 gal/min	R Fort Pierce Hunting Club	D Escambia County, Alabama	U Vaughn Elementary School	P Pumped 200 gal/min	D Not measured for this study
	z	s s	z	s s	T 2 2	s s	s s	z z	S S	S
Date	04-10-95	04-13-95 11-01-95	10-30-95	10-11-95 10-30-95	10-06-94 04-18-95 10-31-95	10-11-95 10-30-95	11-03-95	01-10-95 04-17-95 10-25-95	04-28-95 10-26-95	
Water level above or below land surface (feet)	5.0	68.1 66.4	124.8	45.6 45.8	5.5 5.1 5.3	-1.0	173.2	77.8 77.4 77.6	98.5 101.0	
Altitude of land surface (feet)	310	315	245	305	82	20	310	112	115	308
Diameter (inches)	2	4	4	4	∞	4	4	4	12	4
Depth (feet)	72	130	~145	~20	410		390	%	206	140
Driller	53	56	53	ب	16	53	∞	13		'n
Owner	do.	C. Hayles	Matthews	D. Dean	Tensaw Water Authority	Scott Paper	T. Boyette	Baldwin Co. Board of Education	Stockton Water Authority	Hall
Geographic coordinate number	310541087382201	310533087383001	311013087391801	310737087375901	310817087484901	310818087501701	311217087365701	310150087513501	310148087510801	310117087441101
Local	F-12	F-13	F-14	F-15	G-5	H-5	1-21	K-5	K-9	L-3

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Well drilled 1947 and destroyed in 1985					Drilled 1985	Dug well			
Use	Ф	C	ĮĽ	n	n	ឯ	n	Ω	Ω	Ω
Lift	T	S	S	Z	Z	S	Z	Z	Z	z
Date		04-10-95 10-30-95	01-11-95 04-10-95 10-30-95	04-14-95 10-30-95	10-30-95	01-10-95 04-13-95 11-01-95	01-10-95 04-13-95 11-01-95	11-03-95	01-12-95 04-10-95 10-30-95	04-10-95
Water level above or below land surface (feet)		33.9 34.3	29.2 28.8 28.5	61.2 53.6	58.2	71.6 71.3 71.1	41.0 37.9 37.6	43.3	67.3 67.8 65.6	66.5
Altitude of land surface (feet)	270	212	205	301	305	195	232	230	292	292
Diameter (inches)	4	4	4	2	2	4	7	4	7	2
Depth (feet)	260	101	160	06~	~62	230	99	~140	<i>~</i> 76	66
Driller	17	S	26	53	19	26	53	29	26	56
Owner	Perdido Jr High School	Perdido Vineyards	Perdido Fire Department	T. Brown	E. Long	Scott Paper Co.	E. Howell	do.	G. Stewart	H. Stewart
Geographic coordinate number	310016087372001	310110087385001	310116087384501	310141087422601	310118087420001	305601087401601	305730087371301	305731087370901	305946087442501	305947087442801
Local	M-6	M-8	M-9	M-10	M-11	9-0	0-7	8-0	P-6	P-7

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Local	Geographic coordinate number	Owner	Driller	Depth (feet)	Diameter (inches)	Altitude of land surface (feet)	Water level above or below land surface (feet)	Date	Lift	Use	Remarks
P-8	305621087455201	R. Stewart	26	110	2	272	79.9	04-10-95	z	n	
P-9	305621087455301	do.	26	197	4	272	83.6	04-10-95	S	Q	Drilled 1982
Q-13	305828087513701	D. Jackson	29	49	7	102	35.8 33.6 32.5	01-12-95 04-13-95 10-25-95	Z	D	
Q-14	305913087515701	Overseas Hardwood Co.	29	~100	4	26					Not measured for this study
Q-15	305856087502301	B. Wiseman	6	190	4	118	71.0	04-13-95 10-25-95	S	ĪГ	
Q-16	305738087512701	A. Crane	56	275	4	110	55.7	11-07-95	S	Д	Drilled 1990, pumped 27 gal/min
T-11	305122087515301	Uniroyal Chemical Co.	21	168	6,2	115	65.4 64.9 64.7	02-01-95 04-17-95 10-30-95	Z	M	Drilled 1983
T-12	304959087520101	C. Williams	13	68	4	154	53.9 54.8 52.1	02-01-95 04-11-95 10-30-95	Z	D	
T-13	305257087533101	P. Patrick	26	230	4	35	11.1	02-01-95 04-11-95	S	۵,	Drilled 1975, pumped 15 gal/min
T-14	305320087492801	Baldwin County	29	26~	4	220	89.1	10-26-95	Z	Z	

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Local	Geographic coordinate number	Owner	Driller	Depth (feet)	Diameter (inches)	Altitude of land surface (feet)	Water level above or below land surface	Date	Lift	Use	Remarks
N-5	305305087462901	City of Bay Minette	81	228	12,8	27.1	(feet) 86.0 85.6 84.0	10-06-94 04-17-95 10-31-95	F	Δ,	Well 1, drilled 1938, reworked 1951, pumped 307 gal/min in
9-N	305258087455801	Plasmine Industries	18	256	24,10	279	82.8	10-31-95	H	υ	1993 Well 7, pumped 968 gal/min in 1959, formerly Newport
8-N	305430087483501	E. Propst	29	~30	2	262	29.3	02-02-95	Z	n	Industries
U-11	305145087462001	City of Bay Minette	18	185	24,12	265	74.6	10-06-94	H	Дı	Well 3, drilled 1965, pumped 503
U-14A	305201087461703	City of Bay Minette	18	185	24,12	255	66.4 66.8	10-06-94 04-17-95	, (-	Q.	gal/min in 1993 Well 4, drilled 1974, pumped 503
U-15	305258087470801	do.	18	265	24,16	269	66.1 85.8 85.4	10-31-95 10-06-94 04-18-95	H	Д	gal/min in 1993 Well 5, drilled 1983, pumped 1,000
U-16	304954087463302	Culver's Nursery	29	~85	4	233	82.2 76.0 70.3	10-31-95 10-28-94 04-11-95	Z	Þ	gal/min, in 1993
U-17	304955087463201	qo.	17	255	9	230	70.1 70.1	10-31-95 11-06-95	S	ပ	Drilled 1974

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Local	Geographic coordinate number	Оwner	Driller	Depth (feet)	Diameter (inches)	Altitude of land surface (feet)	Water level above or below land surface (feet)	Date	Lift	Use	Remarks
U-18	305255087454701	Plasmine Industries	29	~40	2	270	39.0	10-31-95	z	M	Drilled 1994
U-19	305324087430501	Harrison	24	105	4	190	45.6	10-31-95	S	Q	Pumped 8 gal/min
U-20	305405087461501	Hodgson	26	187	9	230	36.9	10-10-95	S	~	Pumped 208 gal/min
8-7	305212087395901	R. Bjornas	26	105	4	180	40.5 39.0 37.5	01-30-95 04-13-95 10-30-95	S	Δ	Drilled 1982
6-A	305212087392201	J. Coolie	56	80	4	185	50.4 49.0	01-31-95 04-13-95	S	Q	Drilled 1994
Y-5	304434087473101	Town of Stapleton	22	112	12	221	53.3 53.5	04-26-95 10-31-95	S	<u>а</u> ,	Pumped 125 gal/min
Y-6	304705087464101	J. Penna	26	180	4	213	99.3 99.6	04-27-95 10-30-95	S	n	Drilled 1977
Y-7	304913087485301	Carpenter	9	~70	4	246	60.0 58.2	04-26-95 10-31-95	z	n	
Y-8	304713087463301	Holly Hills Country Club	53		4	220	62.4 63.9	04-18-95 10-25-95	S	ក	Pumped 125 gal/min in 1995
Z-14	304758087522001	S. Martin	26	~70	4	154	48.2 46.5	04-26-95 10-31-95	S	~	Used to fill pond
Z-15	304517087534801	R.C. Bell	3 6	120	4	8	40.6	10-31-95	S	S	Drilled 1992

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks		Well 1, pumped 200 gal/min in 1965	Well 2, no static water-level measurements made during this study	Not measured for this study	Well 4, drilled 1993, not in use 1994, pumped 402 gal/min	Well 3, drilled 1990			
Use	n	Q	<u>a</u>	Д	<u>م</u>	Д	П	O	ن ت
Lift	z	H	H	H	H	H	S	S	S
Date	10-31-95	10-05-94 04-12-95 10-24-95			10-05-94 04-12-95	10-05-94	04-10-95 10-24-95	10-07-94 04-10-95 10-24-95	04-10-95 10-24-95
Water level above or below land surface (feet)	44.8	129.5 126.8 129.2			134.5 133.4	186.0	131.4 136.9	43.6 43.6 42.9	131.6 136.8
Altitude of land surface (feet)	92	152	170	195	135	200	200	202	205
Diameter (inches)	2	16,10,8	18,12	16,8	16,10	16,8	4	4	9
Depth (feet)	75	309	378	260	349	364	340	99	335
Driller	26	18	18	17	16	16	21	16	16
Owner	R.C. Bell	Spanish Fort Water System	do.	Malbis Plantation	Spanish Fort Water System	Spanish Fort Water System	Everwood Treatment Co.	Griner Drilling	do.
Geographic coordinate number	304519087534301	304024087524401	304007087534201	303910087511001	304017087541401	304037087510501	304037087495601	304034087500101	304032087500101
Local	Z-16	CC-5	9-33	CC-11	CC-14	CC-15	CC-16	CC-17	CC-18

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Used to fill pond	Drilled 1994, Sales Office well, pumped 60 gal/min	Pumphouse well	Rec. Center Well	#11 Tee Well	Pumped 30 gal/min	Pumped 300 gal/min	Pumped 100 gal/min			
Use	2	ក	ų	1	뇐	'n	ħ	D	ក	S	D
Lift	S	S	S	S	S	S	S	S	S	S	Z
Date	04-12-95 10-26-95	11-07-95	11-06-95	11-06-95	11-06-95	10-26-95	10-25-94 04-10-95 10-24-95	10-25-94 04-10-95 10-24-95	10-28-94 04-11-95 10-24-95	04-19-95 10-26-95	04-20-95 10-24-95
Water level above or below land surface (feet)	126.6 128.6	183.2	9.79	146.5	144.2	102.4	55.9 57.4 52.3	50.9 54.5 52.4	48.0 47.8 46.9	28.8 28.1	25.8 30.5
Altitude of land surface (feet)	195	185	150	170	160	140	180	180	215	212	190
Diameter (inches)	4	4	∞	· ∞	∞	4	9	4	4	4	•
Depth (feet)	160	400	170	345	386	240	147	140	118	~100	~108
Driller	17	8	16	16	16	33	17	17	56	19	က
Owner	Malbis Plantation	Timber Creek Golf Club	do.	do.	do.	Fishbein	Flowerwood Nursery	Flowerwood Nursery	J. Reeves	D. Simpson	International Paper Co.
Geographic coordinate number	303910087511201	304007087511301	304005087514201	304035087515801	303950087512701	304106087542601	303855087453301	303856087453301	304306087480101	304323087462501	304222087464201
Local	CC-19	CC-20	CC-21	CC-22	CC-23	CC-24	DD-5	9-QQ	DD-7	DD-8	DD-9

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks			Dug well about 100 years old		Drilled 1995	Drilled 1972				
Use	D	C	n	Q	Ag	۵۰	Ω.	Q	ſĽ	Q
rit	z	S	Z	S	S	S	S	S	S	S
Date	04-20-95 10-24-95	11-01-95	04-27-95	04-27-95 10-24-95	10-12-95	01-30-95 04-18-95 10-25-95	04-27-95 11-01-95	04-13-95 10-25-95	10-07-94 04-13-95 10-26-95	04-27-95 10-24-95
Water level above or below land surface (feet)	38.2 46.8	63.6	8.6	21.0 19.6	45.7	40.1 39.6 39.5	56.4 52.1	3 6.5 36.6	12.1 10.9 10.7	42.7 42.5
Altimde of land surface (feet)	190	192	160	100	160	55	168	110	138	180
Diameter (inches)	9	4	95	4	4	4	4	4	4	4
Depth (feet)	130	~160	24	81	160	263	126	130	~20	~150
Driller	3	29	29	28	3	7	23	3	12	3
Owner	do.	lder Truck Service	Spafford	A. C. Martin	Bartl Farms	State of Alabama	B. Maddox	Simonson	Elsanor Volunteer Fire Dept.	M. Ellison
Geographic coordinate number	304221087464301	304000087454701	304020087351001	304020087361101	304243087362101	303447087251801	303829087263901	303823087345401	303404087370701	303752087405301
Local	DD-10	DD-11	FF-8	FF-9	FF-10	HH-4	HH-5	П-3	7-11	33-8

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Pumped 30 gal/min		Drilled 1959, pumped 305 gal/min	Drilled 1984, pumped 1,125 gal/min			Drilled 1983, pumped 90 gal/min	Drilled 1992
Use	S	ပ	Д	Д	'n	и	ц	ī
Lift	S	S	H	H	S	S	S	S
Date	08-24-95 10-24-95	11-01-95	10-05-94 10-25-95	10-05-94 04-11-95 10-25-95	10-25-94 04-10-95 10-25-95	10-26-94 04-11-95 10-27-95	10-25-94 04-11-95 10-27-95	12-13-94 04-20-95 10-26-95
Water level above or below land surface (feet)	51.8 51.8	51.3	50.1 50.5	62.4 58.6 58.4	58.9 58.9 59.0	61.1 63.0 62.6	43.0 45.6 49.5	61.8 61.8 63.2
Altitude of land surface (feet)	154	150	171	165	178	180	172	2 2
Diameter (inches)	4	4	12,8	16,10	9	4	4	4
Depth (feet)	142	~100	184	180	161	~200	160	380
Driller	3	29	18	17	29	29	33	3
Owner	Waters	Baywood Products	City of Loxley	do.	Baldwin Wholesale Florist	Suncoast Nursery	R. Barnhill	G. Burris
Geographic coordinate number	303433087413101	303731087382201	303900087401001	303624087450701	303755087464901	303803087470501	303759087452001	303707087434601
Local	9-11	JJ-10	KK-3	KK-8	KK-9	KK-10	KK-11	KK-12

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks			Drilled 1994, pumped 80 gal/min	Drilled 1966, not measured during this study	Drilled 1974, not measured during this study	Well 5, drilled 1959, pumped 319 gal/min	Well 7, drilled 1982, pumped 596 gal/min	Well 4, drilled 1984, pumped 125 gal/min	Observation well for Well 3
Use	×	×	ų	۵۰	۵۰	۵ı	۵ı	۵۰	0
Lift	z	z	S	⊢	⊢	H	H	H	z
Date	10-12-95 10-30-95	10-12-95 10-30-95	11-01-95			10-04-94 04-14-95 10-27-95	11-01-95	10-04-94 10-31-95	10-27-94 10-26-95
Water level above or below land surface	(1 cc t) 22.8 23.2	22.5 22.8	52.9			65.4 58.9 66.6	68.5	66.2	73.7 65.9
Altitude of land surface (feet)	120	135	130	153	145	145	115	. 142	150
Diameter (inches)	2	7	9	12,6	12	12,8,6	16,10	18,12	∞
Depth (feet)	37	23	200	452	180	315	176	198	210
Driller	53	29	16	18	1	18	22	22	16
Owner	Baldwin County	do.	Peturis	City of Daphne	Belforest Water System	City of Daphne	do.	City of Daphne	do.
Geographic coordinate number	303644087463401	303654087463201	303413087464001	303606087540601	303600087510601	303829087535601	303809087521901	303642087525501	303631087520101
Local	KK-13	KK-14	KK-15	9-TT	LL-10	IT-11	LL-13	LL-14	LL-15

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Observation well for Well 8	Drilled 1994	Drilled 1981		Drilled 1986	Well 8, drilled 1991, not measured for this study	Inactive well, pumped 752 gal/min	Inactive well, pumped 614 gal/min	Well 4, drilled 1981, pumped 748 gal/min
Use	0	Г	Q	Q	占	Д	n	n	۵
Lift	z	S	S	S	S	⊣	H	H	H
Date	10-27-94 04-14-95 10-27-95	12-13-94 04-20-95 10-30-95	10-12-95	10-12-95 11-01-95	11-01-95		09-13-94 04-18-95 10-24-95	10-24-95	09-13-94
Water level above or below land surface (feet)	78.4 70.1 68.3	67.4 67.4 65.8	82.0	43.6 43.5	53.1		90.5 89.8 89.9	68.2	68.9
Altitude of land surface (feet)	155	145	115	140	120	155	118	100	06
Diameter (inches)	∞	4	4	4	4	20	20,12	16,10	20,14
Depth (feet)	215	182	337	~150	220	215	510	479	230
Driller	16	ĸ	10	17	16	16	18	18	18
Оwner	do.	G. Burris	M. Kovac	Corte	Jubilee Landscape	City of Daphne	City of Fairhope	City of Fairhope	do.
Geographic coordinate number	303638087522501	303523087492901	303343087540201	303443087511301	303502087540001	303638087522502	303107087532801	303135087540701	302850087540901
Local	LL-16	LL-17	LL-18	LL-19	LL-20	LL-21	NN-3	4-ZZ	NN-15

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks		Used to process truck crops			Observation well for well 2	Drilled 1962	Well 3, drilled 1955, not measured for this study		
		Usec			Obse for w	Drill	Well not r		
Use	S	Ag	n	ក	0	Д	Д	n	Q
Lift	S	S	S	S	Z	H	H	Z	S
Date	11-17-94	10-12-95 11-01-95	11-06-95	11-02-95	10-25-95	09-14-94 04-18-95 10-24-95		09-14-94 04-17-95 10-23-95	10-26-94 04-18-95 10-23-95
Water level above or below land surface (feet)	63.9	39.2 37.9	10.4	2.5	39.3	55.5 51.2 50.2		4.4 4.1 5.5	12.6 8.8 11.4
Altitude of land surface (feet)	24	120	40	٧,	106	145	102	25	106
Diameter (inches)	4	4	4	4	6,2	10,4	20	2	4
Depth (feet)	96	~100	~100	120	260	197	186	43	~100
Driller	29	ю	29	က	16	1	18	29	29
Owner	Street Dairy	V. Alegra	Lakeforest Golf Course	Lakewood Golf Course	City of Fairhope	Town of Silverhill	City of Fairhope	Fairhope Nursery	W. Wade
Geographic coordinate number	302849087534801	303358087510401	302918087541401	302907087550001	303130087510201	303245087450501	302935087490001	303123087484201	302822087430901
Local	NN-16	NN-17	NN-18	NN-19	NN-20	00-1	4-00	9-00	7-00

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks			Well 3, drilled 1958, pumped 503 gpm	Well 2, drilled 1944, reworked 1958, pumped 400 gal/min	Drilled 1955, pumped 500 gal/min	Drilled 1987, pumped 1,200 gal/min, not measured during this study	Drilled 1989 by owner
Use	占	ឯ	Д	Δ .	۵,	പ	Ω
Lift	ω	S	T	F	H	H	Z
Date	10-26-94 04-17-95 10-23-95	10-26-95	09-13-94 04-20-95 10-24-95	09-13-94 04-20-95 10-24-95	09-14-94 04-20-95 10-23-95		09-14-94 04-18-95 10-23-95
Water level above or below land surface (feet)	62.5 63.4 60.1	25.0	36.4 34.3 34.2	35.7 35.0 34.9	14.9 9.7 12.9		14.4 13.3 13.7
Altiude of land surface (feet)	103	95	140	143	115	138	118
Diameter (inches)	4	4	16,12	91	16,10	18,10	2
Depth (feet)	~110	150	203	260	146	210	30
Driller	29	æ	18	18	18	25	27
Owner	Fish River Tree Farm	Swoboda	City of Robertsdale	do.	City of Summerdale	City of Robertsdale	D. Wilson
Geographic coordinate number	302908087471701	303120087462501	303306087425001	303323087424601	302927087423301	303152087420901	302929087422901
Local	8-00	6-00	PP-1	PP-2	PP-5	PP-7	PP-8

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Water-level measurements questionable				Drilled 1978	Well drilled 1991, pumped 70 gal/min		Well drilled 1991, pumped 70 gal/min	Drilled 1994	Drilled 1974, pumped 457 gal/min
Use	Þ	D	Ω	Г	П	D	Z	S	占	Ф
rit	H	Z	S	S	Т	z	z	S	S	L
Date	10-05-94 04-17-95	09-13-94 04-13-95	09-13-94 04-13-95 10-23-95	10-25-94 04-12-95 10-23-95	04-13-95	04-13-94 10-26-95	04-13-95 10-25-95	04-13-95 10-25-95	04-13-95 10-23-95	09-01-94 04-20-95 10-27-9 5
Water level above or below land surface (feet)	30.5 30.5	7.8	25.4 24.5 24.7	44.3 36.5 40.7	9.08	64.7 63.1	42.4	81.0 81.5	18.4 18.9	27.3 27.6 26.3
Altitude of land surface (feet)	118	82	105	106	118	121	115	122	. 65	52
Diameter (inches)	∞	2	4	9	12,6	9	2	9	4	18,10
Depth (feet)	295	4	~58		415	105	52	225	110	280
Driller	17	m	29	29	17	т	29	8	т	18
Owner	Sharrett	R. Hanft	Murphy	Flowerwood Nursery	G. Kaiser	Hillandale Farms	G. Kaiser	Hillandale Farms	P&K Nursery	Bay Sewer and Water
Geographic coordinate number	303033087421201	302829087341101	302847087345201	302955087362901	303325087322301	303316087320601	303323087322201	303316087321101	302952087345001	302401087272301
Local	6-4d	7-00	90-8	6-00	00-10	00-11	00-12	00-13	00-14	SS-15

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Local	Geographic coordinate number	Оwner	Driller	Depth (feet)	Diameter (inches)	Altitude of land surface (feet)	Water level above or below land surface (feet)	Date	Lift	Use	Remarks
SS-16	302356087273601	do.	28	247	4	47	24.4 23.3	04-20-95 10-27-95	z	×	Drilled 1976, pumped 60 gal/min
SS-17	302341087273701	do.	29	~54	4	30	18.1	04-20-95	Z	M	
SS-18	302324087273701	do.	29	~52	4	30	14.4	04-20-95	Z	M	
SS-19	302543087271501	D. Lee	ĸ	180	4	80	59.4	10-27-95	S	R,D	Drilled 1995
TT-10	302423087334601	M. Kaiser	ю	170	9	08	30.4 30.0 28.9	09-12-94 04-17-95 10-25-95	H	n	Drilled 1982
TT-11	302447087324901	Woemer Properties	ю	09	4	82	8.9 9.4 10.0	08-30-94 04-17-95 10-25-95	S	ပ	
TT-12	302446087331001	Bailey	3	~200	∞	88	26.4 27.1 26.8	08-30-94 04-17-95 10-25-95	S	'n	
TT-13	302432087331901	do.	8	120	4	83	34.0 34.8 34.3	08-31-94 04-17-95 10-25-95	S	_∞	
TT-14	302727087312301	Scott Paper Co.	18	372	9,6	85	43.7 43.6 44.1	09-14-94 04-12-95 10-23-95	S	ပ	Drilled 1991
TT-15	302727087312601	do.	18	390	20	84	42.5 42.5	09-14-94 04-12-95	H	ħ	Drilled 1991, pumped 1,125 gal/min

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Lift Use Remarks	R Ir Inactive well, could not measure	S D Drilled 1993	S Drilled 1994	T P Well 8, drilled 1962, pumped 565 gal/min	T P Well 7, drilled 1954, pumped 320 gal/min	S				
Water level above or below land surface (feet)		14.9 04-21-95 15.3 10-23-95	7.2 04-21-95 7.1 11-01-95	25.8 10-04-94 20.1 04-20-95 19.2 10-24-95	21.0 10-04-94 21.1 04-20-95	15.4 09-14-94	12.0 04-12-95 14.9 10-26-95			
Altitude ter of land s) surface (feet)	95	92	75	69	78	59		59	59	59 55 92
Diameter (inches)	9	4	4	24,12	16,10	4		4	4 4	4 4 4
Depth (feet)	~190	\$	93	157	148	~100		~100	~100	~100 ~100
Driller	29	8	8	18	18	53		59	29	2 2 2
Owner	D. Bitto	J. Frank	Armstrong	City of Foley	City of Foley	Wholesale Nursery		do.	do.	do. do. Woemer Industries
Geographic coordinate number	302744087362201	302555087325401	302720087323201	302413087405001	302416087410001	302425087372001		302425087372002	302425087372002 302435087372501	302425087372002 302435087372501 302655087381001
Local	TT-16	TT-17	TT-18	9-00	6 -NN	UU-13		UU-14	UU-14 UU-15	UU-14 UU-15 UU-16

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Drilled 1987						Used to fill pond		
Use	D,In	ħ	M	M	×	×	Ir,R	ĪŢ	Ag
Lift	S	S	Z	Z	z	Z	S	S	S
Date	11-16-94	09-14-94 04-18-95 10-24-95	09-13-94 04-19-95	09-13-94 04-19-95	09-13-94 04-19-95	09-13-94 04-19-95	09-14-94 04-18-95 10-26-95	09-08-94 04-19-95 10-24-95	10-05-94 04-18-95 10-24-95
Water level above or below land surface (feet)	8.6	30.4 29.8 28.8	33.7 35.1	13.2 12.9	33.5 34.4	22.6 22.7	14.5 14.1 13.6	29.2 29.5 26.2	28.3 28.5 27.7
Altitude of land surface (feet)	68	59	06	63	80	99	79	83	95
Diameter (inches)	4	4	2	7	7	2	4	4	4
Depth (feet)	~100	120	4	38	40.6	8	95	150	120
Driller	3	29	29	29	29	29	ю	29	3
Owner	do.	Pine Rest Cemetery	Baldwin County	op	Baldwin County	do.	Enfinger	Baldwin County	W. Cleverdon
Geographic coordinate number	302817087390001	302424087443101	302726087460001	302712087463101	302725087463101	302651087463101	302707087443401	302640087461001	302652087432901
Local	UU-18	VV-11	VV-12	VV-13	VV-14	VV-15	VV-16	VV-17	VV-18

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks						Well 5, drilled 1991, pumped 708 gal/min		Drilled 1965	
Use	占	×	R.P	n	Q	<u>م</u>	占	n	ឯ
rit	H	z	S	Z	S	H	S	S	~
Date	12-15-94 04-19-95 10-24-95	10-24-95	10-25-95	08-30-94 04-18-95	08-30-94 04-19-95 10-23-95	04-18-95 10-24-95	11-17-94 04-20-95 11-01-95	04-18-95 10-23-95	10-04-94 04-20-95 10-23-95
Water level above or below land surface (feet)	46.0 46.3 43.6	31.0	15.3	35.9 36.3	43.2 43.1 42.4	62.3 57.6	47.0 46.9 46.0	1.5	23.0 23.0 23.4
Altitude of land surface (feet)	83	80	26	92	55	08	72	∞	56
Diameter (inches)	∞	2	4	2	4	24,16,12	9	4	9
Depth (feet)	192	45	140	07	145	335	140	189	~200
Driller	3	29	ю	20	29	16	ю	13	ю
Owner	R. Norris	Baldwin County	do.	C. Ward	R. Harris	City of Fairhope	Anderson	Baldwin County	Kaiser Farms
Geographic coordinate number	302623087473501	302640087462001	302438087490701	302812087511001	302453087503701	302819087525501	302659087532901	301858087434201	302149087435101
Local	VV-19	VV-20	VV-21	WW-1	WW-4A	W.W-9	WW-10	9-X.X	YY-12

Records for selected wells in Baldwin County, Alabama, 1996--Continued

								6,
Remarks	Drilled 1978, pumped 1,000 gal/min				Drilled 1978, pumped 1,000 gal/min	Drilled 1994	Drilled 1994	Well 7, drilled 1986, pumped 110 gal/min
Use	扣	占	и	Ag	n	占	Ω	۵,
Lift	F	~	S	S	H	⊢	Z	H
Date	10-05-94 04-19-95 10-23-95	11-16-94 04-19-95	11-17-94 04-19-95 10-23-95	04-19-95 10-23-95	04-19-95 10-23-95	04-18-95 10-23-95	04-19-95 10-23-95	10-03-94 04-10-95
Water level above or below land surface (feet)	33.4 33.8 35.1	20.8 20.5	21.1 20.6 20.9	21.5 21.9	21.4 22.4	29.4 29.7	17.7	8.3
Altitude of land surface (feet)	62	36	39	40	43	54	53	01
Diameter (inches)	12	9	9	4	12	12	4	16,10
Depth (feet)	500	~200	188	110	273	220	57	203
Driller	17	8	ĸ	3	17	3	3	4
Owner	Kaiser Farms	M. Lipscomb	M. Noltie	Lipscomb Farms	Cleverdon Farms	Woemer Farms	Woemer Farms	City of Gulf Shores
Geographic coordinate number	302130087440301	302129087474101	302129087473101	302125087472901	302039087453701	302131087451501	302131087451501	301818087422101
Local	YY-13	YY-14	YY-15	YY-16	YY-17	YY-18	4Y-19	L-ZZ
				= 0				

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Observation well for Well 7	Well 6, drilled 1987, pumped 602 gal/min	Observation well for Well 6	Well 5, drilled 1984, pumped 1,499 gal/min, turbidity problem		Drilled 1975, pumped 1,200 gal/min	Well 5, drilled 1989, pumped 1,500 gal/min, iron problems
Use	0	Δ,	0	n	Й	ħ	Д
Lift	z	H	Z	z	H	S	F
Date	11-16-94 04-10-95 04-18-95 10-25-95	10-03-94 04-18-95 10-24-95	11-16-94 04-18-95 10-24-95	10-06-94 11-22-94 01-13-95 04-10-95 10-23-95	11-17-94 04-18-95 10-23-95	04-18-95 10-23-95	10-03-94 04-20-95 10-24-95
Water level above or below land surface (feet)	6.3 6.8 7.2 9.5	36.2 37.7 37.8	41.4 37.1 37.2	19.0 16.8 18.3 19.0 17.1	13.6 11.7 16.1	13.1	3.6 4.5 7.5
Altitude of land surface (feet)	10	41	43	40	30	26	15
Diameter (inches)	4	20,12	7	20	9	12,6	24,16
Depth (feet)	193	218	205	325	125	428	197
Driller	29	4	29	4	ĸ	17	18
Owner	do.	op.	op.	City of Gulf Shores	Craft, Inc.	op.	Orange Beach Water & FPA
Geographic coordinate number	301818087422102	301841087415001	301842087414501	301933087402801	301803087401401	301804087403201	301755087384301
Local	ZZ-7A	8-ZZ	ZZ-8A	ZZ-10	ZZ-12	ZZ-13	ZZ-14

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Drilled 1993 and plugged 1995	Observation well for Well 8		Drilled 1978	Drilled 1970, H ₂ S problem	Drilled 1993	Drilled in 1995 for water sampling and withdrawal tests	Well 10, drilled 1991, pumped 708 gal/min		
Use	占	0	Ī	n	n	1	H	۵,	Д	Д
Lift	S	Z	S	Z	Z	S	Z	H	S	S
Date	10-07-94 04-12-95	04-19-95 10-25-95	11-15-94 04-17-95 10-24-95	12-14-94 04-17-95	12-14-94 04-17-95	04-18-95 10-24-95	04-20-95	10-24-95	10-25-95	10-27-95
Water level above or below land surface (feet)	5.7 4.9	16.5 21.3	11.0 7.6 10.2	6.5	10.0	16.6 20.5	8.0	23.2	10.3	16.8
Altitude of land surface (feet)	49	30	53	31	36	32	17	09	33	39
Diameter (inches)	9	2	4	2	2	∞	10	20,12	4	4
Depth (feet)	96	193	~70	100	71	120	120	210	75	75
Driller	3	53	3	3	3	3	18	18	en.	æ
Owner	Meadow Run Golf Course	City of Gulf Shores	J. Vinson	Boutwell	Boutwell	Woodlands Golf Course	Orange Beach Water & FPA	City of Foley	Pineridge Trailer Park	Meadowdale Trailer Park
Geographic coordinate number	302126087404301	301818087405101	302033087390001	301927087380001	301935087380001	301845087410501	301757087384501	302214087411301	302119087415701	302119087415201
Local	ZZ-15	ZZ-16	ZZ-17	ZZ-18	ZZ-19	ZZ-20	ZZ-21	ZZ-22	ZZ-23	ZZ-24

Records for selected wells in Baldwin County, Alabama, 1996--Continued

				=	=		<u>ل</u>	t.
Remarks		Drilled 1995 for observation well	Drilled 1995 for aquifer tests	Drilled 1994 for aquifer tests, well destroyed	Drilled 1994 for aquifer tests, well destroyed	Drilled 1977	Flowing well supplies fountain in front of house	Drilled 1978 or 1979 by Alms or Holland
Use	Ir,R	0	H	H	H	n	Д	n
Lift	S	Z	Z	z	Z	Z	Z	Z
Date	10-23-95	10-24-95	10-24-95			09-08-94 04-13-95 10-26-95	04-14-95 10-15-95	01-12-95 04-13-95 10-26-95
Water level above or below land surface (feet)	3.7	28.9	25.2			25.2 25.0 25.0	-12.4	18.6 16.6 18.8
Altitude of land surface (feet)	29	41	36	52	52	28	13	31
Diameter (inches)	9	4	9	12	12	7	4	9
Depth (feet)	~100	290	305	435	256	78	155	81
Driller	29	16	16	16	16	10	59	53
Owner	Glenlakes Golf Course	Orange Beach Water & FPA	do.	Orange Beach Water & FPA	do.	Josephine Baptist Church	J.C. Peevy	Barbor, Inc.
Geographic coordinate number	302145087380401	301932087384301	301938087384301	302017087381401	302017087381402	301928087323101	302138087343901	302052087331901
Local	ZZ-25	ZZ-26	ZZ-27	ZZ-28	ZZ-29	AAA-17	AAA-18	AAA-21

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Drilled 1995 as test production well, pumped 250 gal/min	Drilled for aquifer test	Drilled 1988	Owner reports that water is muddy after heavy rain	Drilled 1977, pumped 500 gal/min	Iron and H_2S problem	Well 1, drilled 1955, pumped 300 gal/min	Drilled 1977 for saltwater intrusion study
Use	⊢	0	C	Q	Дı	Q	Дı	0
Lift	z	Z	S	S	H	S	H	Z
Даве	04-14-95 10-26-95	04-14-95 10-26-95	04-13-95 11-01-95	10-26-95	09-01-94 04-20-95 10-27-95	09-15-94 04-14-95 10-27-95	04-18-95 10-24-95	09-02-94 04-10-95 10-25-95
Water level above or below land surface (feet)	39.1 39.3	31.5 32.3	21.7 21.8	28.4	43.4 43.4 43.2	39.5 38.3 42.7	11.9	3.2 1.2 3.6
Altitude of land surface (feet)	70	52	59	52	65	46	16	8.3
Diameter (inches)	∞	e	4	4	18,10	4	16,10	10
Depth (feet)	320	330	115	175	310	~120	86	413
Driller	16	18	82	æ	18	29	18	14
Owner	Perdido Bay WS&FPA	Century South Nursery	Century South Nursery	D. Brown	Perdido Bay WS&FPA	J. Denis	City of Gulf Shores	State of Alabama
Geographic coordinate number	302249087324101	302024087325401	302208087321601	302246087362801	302303087284501	302122087302101	301606087411301	301519087384501
Local	AAA-22	AAA-23	AAA- 24	AAA-25	BBB-17	BBB-18	DDD-3	6- QQQ

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Local	Geographic coordinate number	Owner	Driller	Depth (feet)	Diameter (inches)	Altitude of land surface (feet)	Water level above or below land surface (feet)	Date	Lift	Use	Remarks
DDD-10	301519087384502	đo.	14	140	2	6.5	3.8 3.7 4.0	09-02-94 04-10-95 10-25-95	z	0	do., saltwater well
DDD-29	301514087383701	đo.	29	344	2	7	4.2 2.3 4.6	09-13-94 04-10-95 10-25-95	Z	0	do.
DDD-34	301629087411001	City of Gulf Shores	18	138	20,12	==	6.8	04-18-95 10-24-95	H	Δ,	Well 2, drilled 1967, pumped 503 gal/min
DDD-35	301749087395001	Orange Beach Water & FPA	7	4	12,8	25			H	<u>م</u>	Well 1, drilled 1974, not measured during this study
DDD-35A	301749087395002	do.	8	200	7	26	13.3 11.4 14.2	12-14-94 04-21-95 10-25-95	z	0	Observation well for Well 1
DDD-36	301732087410701	City of Gulf Shores	18	215	20,12	16	8.3 10.2 9.9	10-03-94 04-18-95 10-24-95	H	<u>م</u>	Well 3, drilled 1978, pumped 750 gal/min
DDD-37	301718087380301	Orange Beach Water & FPA	4	120	18,10	10	10.8 6.4 7.4	10-03-94 04-20-95 10-24-95	H	<u>م</u>	Well 2, drilled 1981, pumped 503 gal/min
DDD-38	301727087390201	qo.	-	143	16	10	5.1 4.8 5.9	12-14-94 04-20-95 10-25-95	z	0	Observation well for Well 4, drilled 1983

Records for selected wells in Baldwin County, Alabama, 1996--Continued

Remarks	Well 3, drilled 1983, pumped 500 gal/min	Drilled 1979, pumped 465 gal/min, flowed when drilled	Drilled 1985, pumped 300 gal/min	Drilled 1971	Drilled 1995	Drilled 10-25-95
Use	Δı	0	រា	ų	뇐	뇐
ritt	H	z	Τ	T	S	z
Date	04-20-95 10-24-95	12-14-94 04-20-95 10-24-95	09-02-94 04-19-95 10-25-95	09-02-94	10-25-95	10-25-95
Water level above or below land surface (feet)	2.0	1.8 .5 2.2	19.1 17.6 21.0	18.7	s.4.	14.6
Altitude of land surface (feet)	6	٢	21	21	7	16
Diameter (inches)	16,10	9	24	20,12	∞	9
Depth (feet)	408	370	440	153	160	165
Driller	41	14	14	7	3	3
Owner	Orange Beach Water & FPA	Orange Beach Water & FPA	State of Alabama	do.	Gulf Shores Golf Club	Peninsular Golf Course
Geographic coordinate number	301718087380401	301715087380401	301630087392601	301629087392601	301628087421801	301517087461101
Local	DDD-39	DDD-42	DDD-43	DDD-44	DDD-45	EEE-12